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ABSTRACT

These materials for planning a developmental curriculum are designed to be presented in a workshop format, by trainers, for caregivers of young children. Contents of the workshop modules focus on gross motor development, perceptual-motor development, woodworking, preschool math and science, cooking, rhythm and music, and socio-dramatic play. A section of most modules relates the topic discussed to preschool education. Each of the seven sets of workshop materials includes many aids for the trainer, including training objectives, factual material, suggestions for presenting the material, resource articles, follow-up ideas, and handouts which may be reproduced for participants. The module on gross motor development, for example, has the following subsections: preparing the workshop, the presentation, gross motor activities in the preschool, resources for the trainer and appendices providing a questionnaire and a checklist. A product of collaboration by the School of Education, University of Michigan, and the City of Ann Arbor, these materials are considered appropriate for self-instruction, child development associate training, or courses at high school, junior college or university levels. (Author/RH)

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What Do We Do Today?

Planning a Developmental Curriculum

Edited by

Carol Carter Alexander

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Modules for
Training Caregivers of Young Children

City/University EPSDT Day Care Project

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This book is one in a series of three:

"Teacher, I Don't Feel Well": Meeting Children's Health Needs

"Feeling Good": Helping Children Grow Emotionally and Socially

"What Do We Do Today?": Planning a Developmental Curriculum

The Project also produced a Final Report, an Executive Summary, and a parent activity booklet: "Big Hands, Little Hands Together: A Collection of Activities for Parents with Preschoolers".

All materials are available through the University of Michigan, School of Education.

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PREFACE

The City/University EPSDT-Day Care Project was a three-year research and demonstration project funded by HEW to the Michigan Department of Social Services and carried out by the joint collaboration of the University of Michigan, School of Education, and the City of Ann Arbor.

The Project served a population of approximately 750 preschool children and their families through day care centers and family day care homes in Washtenaw County. It developed a comprehensive and interdisciplinary approach to early health assessment of the children, follow-through, and training and consultation for day care staffs on behalf of the children and their families.

The Project's innovative-approach used the Early and Periodic Screening, Diagnosis and Treatment model plus making available a separate developmental assessment on-site for each child in the day care setting. In addition, teams of a nurse, social worker, and education consultants provided systematic consultation and training to the caregivers, based on mutually set goals with day care staffs.

The services provided by the Project resulted in the development of seven different workshop presentations in curriculum areas. This book was published in order to share the content of these workshops and to suggest methods for presenting them.

Each workshop includes everything a trainer needs to present the program: training objectives, factual material, suggestions for presenting the material, resource articles, follow-up ideas and handouts which may be reproduced for participants. Pages designed for and used by the Project as handouts are marked with the Project title.

The material in this book is designed to be presented in a workshop format, by trainers, for caregivers of young children. The material is also appropriate for self-instruction, Child Development Associates training, or courses at the high school, junior college or university level.

The Project staff hopes you will find these workshops useful in enriching your day care program.

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We also want to thank Eugene Handley and Margaret Krasnoff who provided organization, moral support and helpful suggestions for developing the workshops presented here and also those who contributed to the production of this book: Virginia duRivage for illustrations and layout, Karen Lind and Max Gates for editorial assistance, and Nancy Lux for typing.

Special thanks go the staffs of the participating day care centers. Their ideas, enouragement and forebearance contributed to the development of this module.

We acknowledge the entire staff of the City/University EPSDT-Day Care Project for giving so freely of their talents and energies.

Gross Motor Development

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PREPARING THE WORKSHOP ON GROSS MOTOR DEVELOPMENT

Workshop Objectives

1. To discuss the relationship between gross motor and other areas of development (e.g., self concept, language).
2. To explain the developmental sequence of gross motor skills and the importance of being aware of the child's developmental level in gross motor skills.
3. To describe the most common orthopedic problems in young children.
4. To provide caregivers with activities for different gross motor developmental levels.
5. To discuss gross motor activities that should be avoided with young children.
6. To show examples of inexpensive equipment that can add variety to gross motor activities.
7. To encourage caregivers to use a variety of approaches in presenting movement activities.
8. To provide sources of free and inexpensive materials to use for gross motor equipment.
9. To provide instructions for making inexpensive gross motor equipment.

Materials for the Workshop

Hand-Made Materials

Hoop*
Racket*
Tin can stilts*
Scoop*
Bean bags*
Yarn balls*
Felt squares
Poster board target*

Commercial Materials

Assorted sponges
Frisbee
"Chore-boy"/"Chore-girl"
Practice golf ball
Scooter board
Chinese jump rope
Laundry basket for storage
Record Player/Tape Recorder
Variety of books from the bibliography
Newsprint
Felt tip pens
Masking Tape

Records

From Hap Palmer, Educational Materials, Inc.

Movin'
Simplified Folk Songs
Creative Movement and Rhythmic Expression
Ideas, Thoughts and Feelings
Modern Tunes for Rhythms and Instruments
Feelin' Free

From RCA, Dance-A-Story

The Magic Mountain
Noah's Ark

The Nutcracker Suite
Peter, Paul and Mommy

---

*Instructions for making these materials are provided in "Gross Motor Equipment You Can Make."

Suggested Workshop Format

Method of Delivery

A large proportion of the Gross Motor Development Workshop was a formal presentation. This was necessary because much of the information conveyed was not readily available to caregivers. To balance the formal presentation, caregivers were encouraged to share ideas about particular topics (e.g., balance activities), selections from a variety of records were played, and we encouraged caregivers to voice their questions and concerns. In addition, samples of hand-made equipment were on display along with several books from the bibliography and time was provided for examination of these materials.

Prior to the workshop, a questionnaire was sent to each day care center in order to acquire baseline information about the center's gross motor area. Based on this information and on the expressed interests, concerns, and level of sophistication of each group, the emphasis upon developmental theory, approach to activities and sharing of activity ideas was modified.

Whenever this workshop was delivered on-site at a day care center, it was followed by another workshop, led by a community resource person. Caregivers chose between Creative Movement and Further Use of Gross Motor Equipment as the topics for these sessions.

Time Table (90 minute workshop)

Time	Topic	Method of Presentation
10 minutes	An Overview of Gross Motor Activities	Formal Presentation
60 minutes	Charts of Gross Motor Development An Introduction to Gross Motor Skill Development A. Locomotor Skills B. Nonlocomotor Skills C. Capacities which Underlie Gross Motor Skills Detecting Orthopedic Conditions that May Affect Gross Motor Activity	Formal Presentation ↓
10 minutes	Further Questions	Group Discussion
10 minutes	Opportunity to View Display	Informal Browsing

THE WORKSHOP PRESENTATION

I. An Overview of Gross Motor Activities

During the 1920s and 1930s nursery school programs were generally oriented toward the social-emotional rather than the cognitive development of young children. Gross motor activities were an integral part of these programs, often providing an opportunity for creative movement and self-expression.

The "arrival" of Sputnik in the late 1950s strongly influenced the general thrust of education, including nursery school education. Compensatory education programs were set up with Head Start in the forefront. The prevalent cry became, "Let's make children smarter faster." In middle class nursery schools this resulted in a new emphasis on cognitive development and a decrease in the role of gross motor activities, a trend which continues today.

Omitting or de-emphasizing gross motor skills was not a necessary direction for schools to take to increase cognitive skills. Educators who espoused this shift failed to understand the intrinsic value of gross motor activity and its relationship to other areas of development and learning. When a toddler learns to crawl and walk there is a look on her face of pride and excitement. This is the beginning of her establishment of autonomy, feelings of accomplishment and body control. Too often as the child gets older that look is no longer apparent. This may be partly because opportunity for movement becomes greatly curtailed.

If we believe that the opportunity for gross motor activities contributes to the development of a positive self-concept and to cognitive development, then we need to rethink ways to incorporate it into day care programs. We must provide the opportunity for movement, allowing the child to discover for herself what she can do and cannot do, to experience challenge without too much frustration and to explore the environment and her relationship to it.

Based on this premise, there are two general themes in this workshop on gross motor development. One is the importance of learning to move, the development of motor skills. The other is learning through movement, using movement as a vehicle for the development of concepts. Throughout this workshop learning in these areas is intertwined.

As the child moves up, down, over and under obstacles and through tunnels, she begins to understand spatial relationships and to orient herself in space. She becomes aware of height as she uses climbing apparatus, anticipating and planning movements as she figures out how to reach the next higher bar. We can encourage spatial exploration and movement with questions such as, "Can you find a space and move without running into or touching anyone else?"

We encourage cognitive learning through these kinds of activities as well. While we do not expect preschoolers to distinguish between right and left, we can present activities in which both sides of the body are integrated. Directionality can be addressed as the child moves forward, backward or sideways. Size becomes important as the child realizes that she can fit into some things but not into others. Creative movement tasks such as "Move like a snake," "Make yourself as small as you can" and "Stand like a tree" focus on the concepts of tempo and level. Discussion of shape, texture and weight can be encouraged by the use of a variety of props in the gross motor area. We do not often think of physics as part of the preschool curriculum, but as children move they discover which things can be pushed and pulled; they can experiment with resistance to gravity as they jump or climb. With all of the activities we can encourage language development by asking children to describe what they are doing or by providing descriptions for them.

II. Charts of Gross Motor Development

A. We have printed two charts on gross motor development: one on infant development and one on early childhood development. The charts are not intended to be used for step-by-step analysis and teaching of gross motor skills. But because children develop many of these important skills during their preschool years, if you are familiar with these skills and with the sequence in which they develop you can observe change more easily. You can also check to see if children are using a variety of movements and you can structure the environment so that a child can both move at her current level and work toward a more advanced level.

B. We have included approximate ages on the charts. If the charts are used in combination with your own observations you can learn to set reasonable expectations for children who are at different levels. For example, you would not expect to see a mature catching pattern in a three-year-old. But you would expect to see the beginning stage of this skill as the child holds her arms stiffly in front of her body.

Chart of Infant Gross Motor Development

3 mo.	Holds chest and head erect for 10 seconds when lying on stomach
	Rolls from stomach to back
	Rolls from back to stomach
6 mo.	Sits alone momentarily
	Creeps
	Crawls
9 mo.	Pulls to standing position
	Cruises
	Stands alone
12 mo.	
	Walks independently
	Gets to standing position without external aid
15 mo.	

There is a wide range of normal development. The above ages only represent the average age at which children reach these developmental milestones.

Developmental Sequence on Basic Motor Skills

	WALKING	RUNNING	JUMPING	HOPPING	SKIPPING	BALANCING	CLIMBING	THROWING	CATCHING	KICKING
1 yr	-Walks alone -Rapid running-like walk -May walk sideways Must visually monitor walk	"Hurried" walk	Steps off low objects				Can crawl upstairs before walking Learns to climb stairs without alternating feet			"Pushing" sort of kick movements very haphazard
2yrs	Able to walk in straight line Rhythm stabilizes Walks on tip-toes Can walk sideways and backwards	True running appears but can't stop and start well	Employs 2-foot take off			Can stand on beam Will attempt to walk with 1 foot on beam and 1 on floor		Throws primarily with backwards and forwards action of arms. Body remains facing in direction of throw, no weight shift By middle of 3rd year, some body rotation, beginning to look in direction of throw	Stops a rolled ball	Between 2 and 6 kicks stationary ball with minimal forward movement Without development trend is from kicking at the ball to following through on the kick with accompanying arm action
3yrs	Can walk a line-heel to toe Can walk without looking at feet		Standing broad jump with minimal arm action	Can hop 2-3 steps on preferred foot		Can stand on 1 foot 3-4 seconds Can walk balance beam short distance	Alternates feet when climbing stairs	Can throw ball 10' Shift of body weight toward throw	Arms held straight and elbows still in front of body	
4yrs	Walks perfectly, changing speed and exhibiting consistant speed and rhythm	Runs with good form: stops, starts, turns Running ability increases and good reciprocal arm action seen	Can take 3 jumping steps forward Skillful jumping apparent Can jump over 10" barrier	Hops 4-6 steps on 1 foot	Early skipping attempts are skip on 1 on foot, walk on other	Can walk a line around circle Can balance on one foot, with eyes open, 4 seconds or more Can walk balance beam slowly	(Ladder climbing follows similar progression)		Elbows fixed but hands open to receive ball	
5yrs		Runs with good speed	Can broad jump 2-3' (also jumps 1 foot hurdle)	Can hop 50' in 11 seconds	20% of 5yr olds skip with proficiency Proficient skipping usually not til 6 1/2 years	Can walk beam with speed		Takes step and makes pronounced weight shift as ball is released Improved velocity and accuracy	Can catch large ball bounced to him/her Arms and elbows at side of body permitting them to give when ball arrives	
6yrs										

C. Individuals progress differently in the development of motor skills. One child may skip one or more stages and achieve a mature pattern as early as three or four years of age. Another child may linger at an early level of skill development and then pass quickly through one or more stages without pause.

D. It is common for children to move along at different rates in each skill. However, if, after a lot of time and encouragement, a child does not progress in a skill, you should then communicate your concern to the child's parent and see if the child's pediatrician is aware of the child's condition. It is possible that the child has not had much prior opportunity for movement experience.

E. Throughout gross motor development, as shown on the chart, the pattern of skill development moves from using an isolated part of the body to coordinating the whole body for the movement. For example, in running, at first the child uses her legs without coordinating her arms with the leg movements. Later there is both leg and arm coordination and a forward thrust of the trunk.

III. An Introduction to Gross Motor Skill Development

Gross motor skills are generally arranged into two groups:

Locomotor: Crawling, rolling, walking, running, hopping, climbing
Nonlocomotor: Catching, throwing, kicking, striking, bending

In addition to these skills children develop related capacities, like balance, strength and flexibility, which allow them to master the gross motor skills. The sequence in which these skills and capacitites develop and methods to encourage the development of these skills are described in this section.

A. Locomotor Skills

1. Prewalking

   a. Developmental Sequence
      1) Creeping (stomach stays on the floor)
         a) This is usually the first form of forward locomotion and is seen between 4 and 12 months with the average age of appearance being seven months.

        b) Creeping occurs when the baby is allowed to remain on her stomach for prolonged periods of time.
        c) First attempts at creeping are likely to occur when the baby tries to reach for an object with both hands at the same time. As her head and chest return to the floor she begins to slide forward and may use her arms to go futher.
        d) Pushing off with the legs normally occurs later in the developmental sequence.
        e) Infants differ widely as to how long they rely on creeping for locomotion.
    2) Crawling (on hands and knees)
        a) Crawling develops from creeping and is typically seen at eight to nine months.
        b) Initial attempts at crawling often take the form of moving one limb at a time (e.g., left arm, right knee, right arm, left knee).
    3) Some infants skip creeping or crawling and/or develop their own forms of locomotion such as rolling sideways or scooting on their bottoms.

b. Encouraging Development of Prewalking Skills
    1) Provide opportunities for the baby to be in open spaces with attractive toys slightly out of reach.
    2) Particularly for group care, exercise programs have been developed which encourage the use and stretching of muscles needed for movement. These programs encourage interactions which stimulate physical, social and language development.
    3) Although creeping and crawling are well developed by the preschool years, they can be used in creative movement and for developing body awareness, spatial relations and laterality Examples of activities which might be used are given in the next section of this module.

2. Walking

a. Developmental Sequence
    1) Two stages usually occur first in the child's development of walking skills:
        a) The infant makes dancing and patting steps against the floor while being supported by an adult. She neither stiffens her legs nor supports her weight
        b) The infant stands, with support, using her feet to bear her weight and her outstretched arms (which are held) for balance.

2) After learning to pull herself upright, the child begins to move laterally around furniture. This is called "cruising" and is seen at approximately ten months of age.

3) Early forward walking occurs at an average age of 12 to 13 months.
   - a) The child assumes a wide stance for support. Her feet point outward and her knees are slightly flexed.
   - b) The first steps are not regular and are not accompanied by reciprocal arm movement.

4) The child learns to stand up without external aid about 1 to 2 months after first walking independently.

5) Further balance, coordination and speed develop as the child matures.

6) An adult gait with leg and arm extension is usually not seen until four years of age.

b. Encouraging Development of Walking Skills

1) A child cannot be forced to walk before her nervous system is ready. It is important to provide a safe, supportive environment so the child has the opportunity to develop this skill.

2) Walking activities should be varied; preschoolers still need practice in starting and stopping, changing direction, walking at different speeds, following paths and walking around and over obstacles.

3) Music is an excellent accompaniment for walking activities.
   - a) Use a variety of music (e.g., folk, classical, popular).
   - b) If you play a piano while the children move be sure to face the group so that you are part of the activity.
   - c) Use drum beats infrequently because they can interfere with the rhythm of a movement. If you use a drum, be sure that the beat follows the child's movements.
   - d) Music activities which were used at the City/University Day Care workshops were:
     - (1) Dance-A-Story: The Magic Mountain
       - (a) Read the story first. The story addresses a variety of concepts and provides an opportunity to practice locomotor and nonlocomotor movement.
       - (b) The record structures the movement activity but it does not limit each child's own interpretation.
       - (c) The side of the record without narrative encourages the group to make up its own story.

            (2) Dance-A-Story: Noah's Ark
            (3) Modern Tunes for Rhythms and Instruments: Hap Palmer
                (a) "How Many Ways"
                (b) "Moving Game"
        4) Activities which encourage the development of walking skills are given in the next section of this module.

3. Running

    a. Developmental Sequence
        1) Running requires a higher level of motor control, better balance and more muscle strength than walking.
        2) At about 18 months we see a "hurried walk." This is not a true run because both of the child's feet do not leave the ground at the same time.
        3) Actual running in a straight line develops between 2 and 3 years of age.
        4) At about age four the child's ability to run improves, as does her ability to start and stop the movement.
        5) By five years of age a more mature running pattern can be seen as the child leans forward, uses her arms in a reciprocal pattern and increases her speed.
    b. Encouraging Development of Running Skills
        1) Most of the suggested walking activities can be used for running.
        2) Running in prescribed paths (as in a circle or between two chairs) helps the child to develop control of her body and provides an opportunity for her to explore how her body fits into space.
        3) Emphasize the outdoors as an appropriate place for running and concentrate on developing other movements (e.g., jumping, hopping) when children are indoors.
        4) Activities which encourage the development of running skills are given in the next section of this module.

4. Jumping

    a. Developmental Sequence
        1) First attempts begin from an object placed on the floor and held in a relatively straight position. The child takes off on one foot and lands on the other foot.

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    2) In the next stage, from a similar position the child jumps off on one foot and lands on both feet.
    3) Most 2 and 3-year-olds can jump in place, landing on both feet simultaneously.
    4) With further development, the child will be able to control starting and stopping movements.
    5) The child does not coordinate her arm swing with her leg movements until about five years of age. In the fully mature jump the child's hands are stretched out in back, then overhead as the child moves forward and lands on bent legs.

b. Encouraging Development of Jumping Skills
    1) Jumping is more difficult than running. It requires:
        a) More strength because the whole body leaves the floor at once.
        b) More balance and coordination because the child must push off, move forward and land.
        c) More courage and confidence.
    2) Through jumping activities, the child develops a greater awareness of height.
    3) Preschool children do not have good control of their bodies when they jump so allow alot of space for jumping activities.
    4) For the child who needs additional support for the development of jumping:
        a) Provide activities that do not require her to jump so that she can build confidence in what she can do with her body. (For example, crawling, creeping, completing simple obstacle courses, climbing in and out of boxes, climbing steps.)
        b) Provide low objects from which the child can step off.
        c) If a child asks for help you can hold her hands for support. This approach will also contribute to the development of trust between you and the child.
        d) Have equipment available for exploration; this encourages children to practice jumping and other motor skills.
    5) For suggestions of equipment and activities which encourage the development of jumping skills, see the next section of this module.

5. Hopping

   a. Developmental Sequence
      1) Before a child can hop she must be able to stand on one foot.
      2) By the age of 3½ years, most children can hop one to three times on their preferred foot, if precision, rhythm or distance are not required.
      3) By five years of age children have developed enough endurance, balance and strength to hop some distance.

   b. Encouraging Development of Hopping Skills
      1) Hopping requires greater strength than jumping because the child must propel herself with one foot. Therefore much less power and proficiency are to be expected, when the child is hopping than when she is jumping.
      2) Preschoolers should not be expected to hop within a small space or to follow the rhythmic patterns involved in hopping on alternate feet.
      3) The next section of this module describes activities which promote hopping skills.

6. Galloping/Skipping/Sliding

   a. Developmental Sequence
      The preschooler does not usually develop these skills.

   b. Encouraging Advanced Skill Development
      1) Be sure that activities are open-ended so that children have the opportunity but not the pressure to perform these skills.
      2) Do not break down these movements or teach them in a step-by-step fashion. It is best for the child to develop the rhythm as a whole.

B. Nonlocomotor

1. Catching

   a. Developmental Sequences
      1) Before the age of 3½ years the child attempts to catch by holding her arms straight out in front in a stiff manner.
      2) At about 4 years, while the elbows are still usually held rigidly, the child begins to accommodate her hands in order to receive the object.
      3) At about 5½ years she holds her elbows and arms to the side as the object comes toward her; she allows them to "give" when the object arrives.

- b. Encouraging Development of Catching Skills
    - 1) The most important approach is to provide a variety of materials with which the child can practice this skill.
    - 2) In selecting objects to catch consider:
        - a) A large ball is easier to "trap" than a small ball; for more mature catching use something that is close in size to a tennis ball.
        - b) A bean bag or foam rubber ball is easier to catch than a hard rubber ball.
        - c) It is more difficult to catch a ball that is thrown up high.
        - d) It is easier to catch a ball that is thrown rather than one that is bounced.
    - 3) Additional suggestions for encouraging the development of skills are included in the next section of this module.

2. Throwing

- a. Developmental Sequence
    - 1) When a child first attempts to throw she usually brings her arm stiffly back and throws or drops the object.
    - 2) By about 3½ years the child begins to look, and to some extent rotate, her body in the direction of the throw.
    - 3) By about 5½ years efficiency improves as the child incorporates a weight shift into her throw. She also steps forward with the foot that is on the same side as her throwing arm.
    - 4) In the mature throwing pattern the child uses diagonal cross-body movement, a weight shift, and reciprocal arm and leg movement.
- b. Encouraging Development of Throwing Skills
    - 1) Most of the suggestions under catching skills apply to throwing skills.
    - 2) To make throwing activities more difficult you can use smaller targets and increase the distance between the child and target.
    - 3) Suggestions for throwing activities are given in the next section of this module.

3. Striking

Encouraging Development of Striking Skills

- a. It is easier for the child to strike an object with her hand than with a paddle.
- b. When paddles are used they should be light-weight.

        3) It is easier for the child to strike at a self-held target than at one that is thrown or bounced.
        4) For further activities to encourage this skill development, see the next section of this module.

C. Capacities which Underlie Motor Skills

1. Balance: The ability to maintain equilibrium or control of the body.

    a. To assess a child's ability to balance, we can look at activities in which balance is a major component. For example, we can expect a child to walk part-way across a four foot balance beam by age three and to walk all the way across the beam by age four-and-a-half.
    b. Any problems with balance will affect performance in all movements. The child with poor balance may have difficulty:
        1) Starting and stopping a movement
        2) Jumping and landing without falling
        3) Throwing a ball without falling
        4) Climbing or hopping
        5) Riding a two-wheeler
        6) Jumping rope
    c. The best way to help children develop good balance is to provide many opportunities to engage in activities such as the above. Specific balancing activities and equipment are described in the next section of this module.

2. Strength

    a. During the preschool years, we are especially concerned with the development of abdominal and shoulder strength.
    b. The development of abdominal strength is essential for good posture.
        1) Young children typically stand with their backs hyperextended and their stomachs sticking out.
        2) The lack of good posture can lead to lower back pain later in life.
    c. We tend to think of exercises as a major way to develop abdominal and shoulder strength and sometimes these can be fun for children. (Refer to How to Keep Your Child Fit From Birth to Six by Bonnie Prudden.) But strength is best developed through movement experiences such as climbing, hanging, swinging and striking at objects.

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d. Several common exercises are actually dangerous for both children and adults:
   1) Sit-ups with the legs extended straight out.
   2) Legs lifts while the child is flat on her back. These place strain on the lower back; the first six inches from the floor are the most critical.

3. Flexibility

   a. The young child, unlike older children and adults, is flexible. However, overextension of this flexibility can lead to ligament damage.
   b. You can provide opportunities for children to work on whole body flexibility through activities such as stretching, twisting, turning, curling up and reaching. These are movements that the child often makes naturally. They can be further encouraged through creative movement tasks. Say to the child:
      "Show me how tall you can be."
      "Pretend you are reaching for the tallest branch of the tree."
      "Roll into a beach ball."
   c. We want to caution against activities that can cause ligament damage:
      1) Those activities that force the child into a deep knee-bend position (e.g., duck walk). Unless the knee is in line with the feet the knee ligament will be overstretched and knee damage can occur later in life (as commonly seen in athletes).
      2) Forming bridges by doing a backbend. This increases the child's tendency toward a hyperextended spine.
      3) Toe touches that are done in a fast and vigorous manner.

      If a child engages in these activities on her own do not become upset. Children usually do not do things that their bodies cannot handle.

4. Other basic capabilities are endurance and speed, which develop during middle childhood.

IV. Detecting Orthopedic Conditions That May Affect Gross Motor Activity*

Gross Motor activities provide a good time for caregivers to observe children's bodies for orthopedic conditions. This handout describes normal development, and common abnormalities and their treatment, to help you with your observation.

Normal Development

Every child begins life with bowed legs. The knees straighten near the age of two. By the age of three, children normally become knock-kneed. This condition usually lasts until approximately eight years of age. Generally, if a child walks, runs without difficulty (e.g., is not excessively clumsy, does not frequently fall or trip) and does not complain of foot or leg pain, it is best to leave her alone.

Conditions which may require attention

Limp or Joint Pain

Any child observed to limp or have painful limbs or joints over an extended period of time should be referred for medical evaluation.

Toeing-In

The most common limb deformities usually are present as toeing-in (or toeing-out). This non-painful orthopedic condition is usually caused by metatarsus adductus, tibial torsion, or femoral anteversion.

Metatarsus Adductus

In this deformity the forefoot curves inward from heel to toe like a comma (Figure 1).

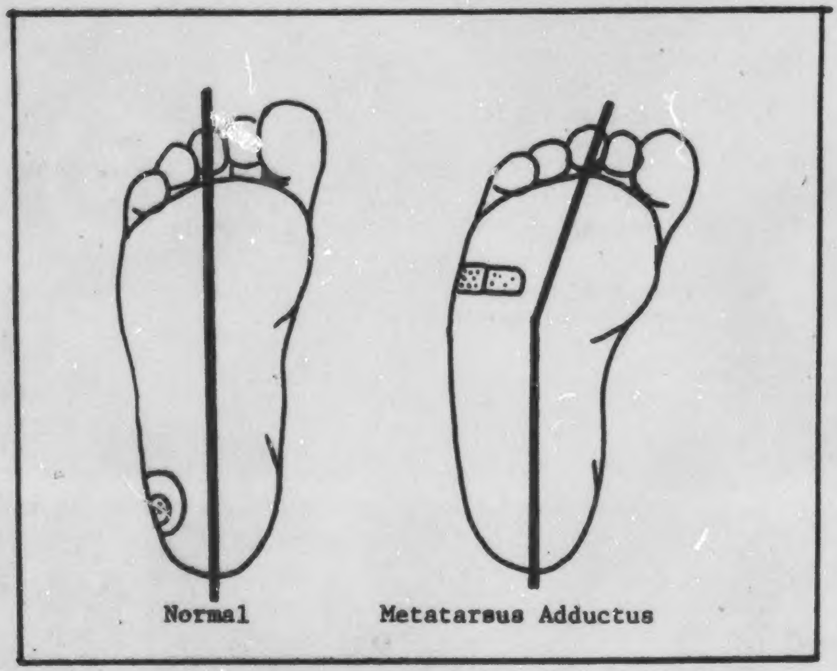
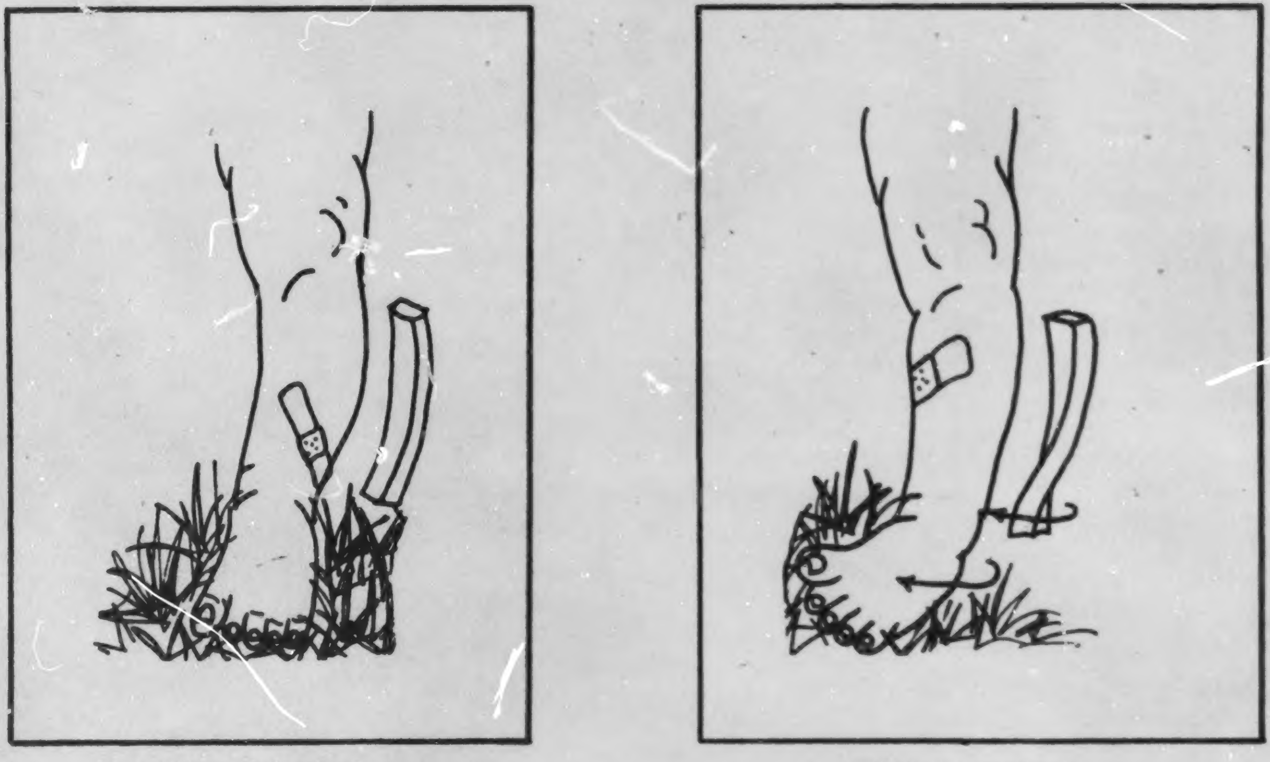


Figure 1. Metatarsus Adductus

This is usually seen in one or both feet at birth, can be mild or severe and is easily corrected. This condition should be corrected before the child starts to walk. Treatment begins with passively stretching the foot. If there is no response, some form of passive correction is needed. This may include casting the foot or having the child wear reversed shoes (left shoe on right foot and vice versa) until active correction is achieved. The child can then progress to normal footwear.

Tibial Torsion

The foot points inward because the tibia or main bone of the lower leg is twisted inward (Figure 2). Tibial torsion tends to be self-correcting. Physicians do not all agree on when or if to treat tibial torsion.



(Normal bowing)

(Tibial torsion)

Figure 2.

The most popular method of treatment consists of shoes attached to a bar, set at an angle which produces correction (Figure 3). Treatment may start as early as six months of age. The bar device is well tolerated by infants and usually provides complete and permanent correction.

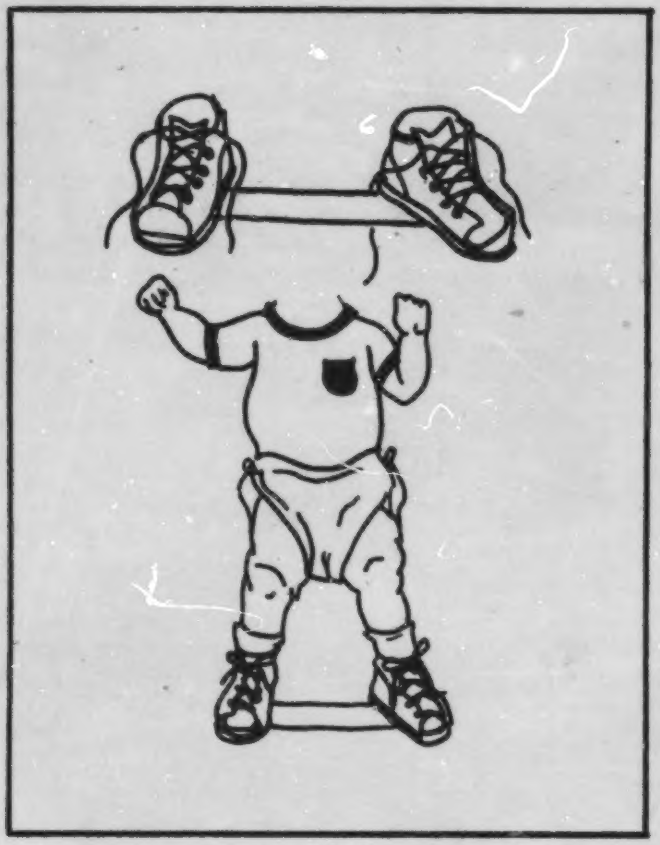


Figure 3.

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Femoral Anteversion

This cause of toeing-in occurs in the femur or thigh bone. The thigh bone can be twisted inward just as the tibial can, resulting in toeing-in. The knees are pointed inward as well as the foot. Femoral anteversion almost always occurs in both legs. When the child with this condition lies flat the foot can be rotated to almost a 90 degree angle (Figure 4).

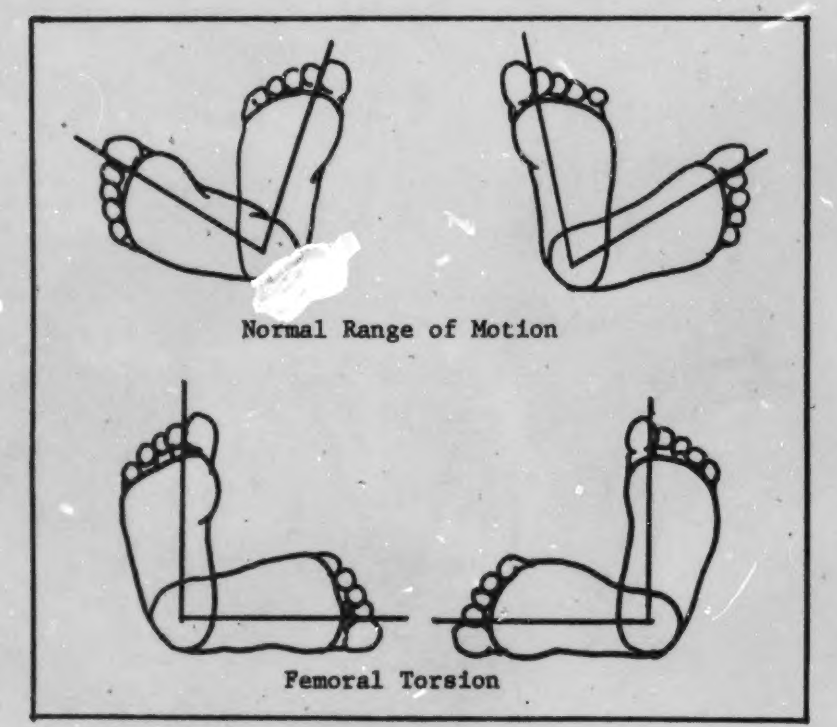

Figure 4. Rotary motion of legs from hip

Most children with femoral anteversion prefer to W sit (Figure 5). Many hours are spent sitting in this position. It is reasonable to attempt to limit W sitting. For example, encouraging children to "tailor" sit. There are no mechanical devices to correct this condition. Usually the condition is self-correcting; the only treatment is massive surgery that is almost never indicated.

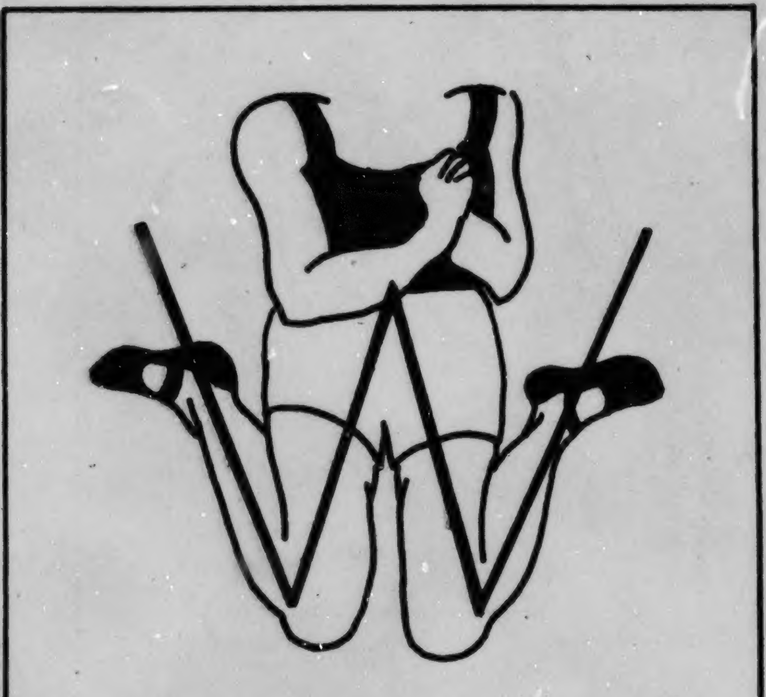

Figure 5.

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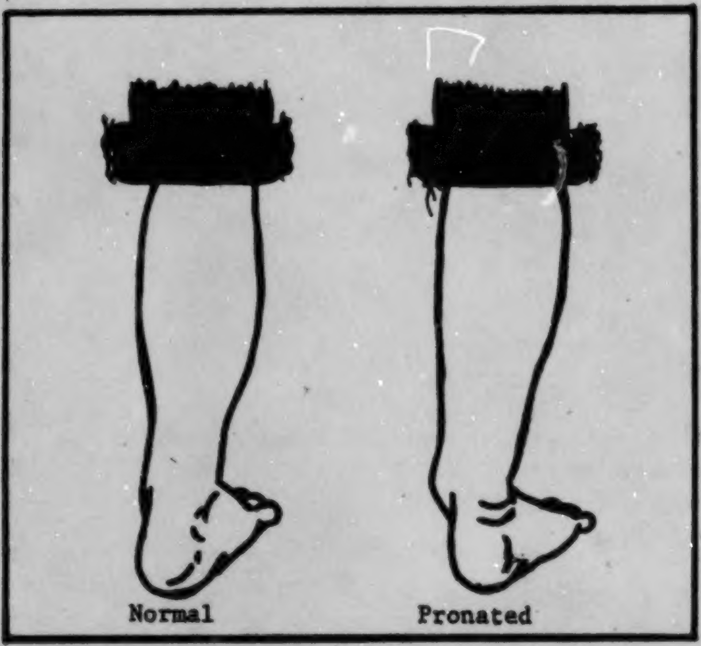
Flat Feet

Flat feet are apparent on all children as they begin to walk. Actually there is an arch, but it is obscured by a fat pad that causes the foot to look flat.

The primary concern is not if the feet are flat but whether they are pronated (Figure 6). Looking at the child standing from behind, you should be able to draw a straight line up from the center of the heel to the center of the knee. In a child with pronated ankles a line from heel to knee will not pass through the ankle joint. This condition requires a doctor's care for special shoes, etc. One clue that a child has pronated ankles is to examine the child's shoes: If pronation exists, the inside edge of the sole will wear out as fast as the inside edge of the heel.



(Pronation of the foot)
Figure 6.

Scoliosis

Scoliosis is an abnormal curve of the spine. The curvature goes from left to right or right to left.

Eighty persent of scoliosis cases are idiopathic (cause unknown) and cases of infantile scoliosis (birth to three years of age) are rare. Most commonly, scoliosis occurs with adolescence. Screening for infantile and juvenile scoliosis can be accomplished by child care workers, particularly in conjunction with physical education and gross motor activities. One way to assess curvature of the spine is to have the child bend forward. The caregiver can then run the forefinger from the base (bottom) of the spine to the top (neck) feeling for a tell-tale asymmetric "hump" on the back. Perhaps a more helpful method for inexperienced hands is to have a piece of chalk and draw a line along the spinal column.

Treatment is generally conservative in the younger child, usually directed toward keeping the curve from becoming worse. An exercise program is usually prescribed; this should be supervised by a physical therapist and may be used in conjunction with a brace. Curvatures of the spine less than 40 degrees will usually respond to bracing. Surgical correction is done for obvious deformity in children age ten or older.

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*This handout on Detecting Orthopedic Conditions That May Affect Gross Motor Activity was prepared by Lynn Collins Clarke.

GROSS MOTOR ACTIVITY IN THE PRESCHOOL

Activities that Promote Gross Motor Development

The preschool period is a time for the development and refinement of large muscle movements and coordination. Children need many opportunities to practice the following:

Locomotor Movements	Crawling	Walking	Rolling
	Running	Hopping	Jumping
	Galloping	Skipping	Sliding
	Climbing		
Nonlocomotor Movements	Catching	Throwing	Kicking
	Striking	Twisting	Stretching
	Bending	Kneeling	Swinging
Balance	Standing on one foot	Walking on tiptoe	
	Landing from a jump without falling	Stopping and starting a movement	

A Suggested Approach for Use of Equipment

1. Have equipment available for the children to explore.

2. Provide a variety of activity choices with each piece of equipment so that the children can work at different developmental levels.

3. Once a child is successful at a task, suggest a more complex variation.

4. If children appear bored with the equipment or task, you might present a short, teacher-initiated activity.

5. Language and concept development can be enhanced while children are involved in movement activities. For example:
   a. The adult or child can describe her movements; use words such as up/down, over/under, forward/backward, slow/fast, high/low.
   b. Questions often motivate further exploration:
   "Can you twist while standing on one foot?"
   "Can you find another way to move across the room?"

6. For children who avoid gross motor activities:
   a. You might say, "Try one new thing today."
   b. Your attitude is the most important factor in gross motor development. What you value is what the child will value. What you fear is what the child will fear.

Locomotor Movements

The following suggested activities can provide many opportunities for a child to develop motor skills and to explore ways her body can move in space.

All Locomotor Skills

Equipment

Obstacle course made from:
- Cardboard boxes
- Tables and chairs
- Carpet squares for stepping stones
- Drawn paths to follow
- Ropes
- Conventional gross motor equipment (e.g., balance beam, steps, tunnels)
- Ladder
- Tires

Activities

Have the child go through the obstacle course in different ways.

Have the child go through the "same way" or a "different way" than the preceding child.

Crawling, Creeping, Rolling

Creative Movement Activities

Move like a snake
Move like a rope
Move through tunnels
Move up and down inclines
Be as small or as big as possible and roll

Walking

Equipment

Balance beam
Ladder placed flat on the floor
Surfaces of different textures (e.g., carpet, grass, foam)
Shapes cut from carpet padding
Steps

Creative Movement Activities

How many ways can you walk?
- Like a robot or monster
- Like a mommy or daddy
- As if you had a sore foot
- On tiptoe
- On heels
- With hands held high
- With toes pointing out or in
- As if it were icy
- As if the wind were blowing
- As if you felt happy, sad or angry
- As if you were walking on jello, peanut butter or glue.

Walk to different tempos.

Walk in different directions.

Lead with different parts of your body (e.g., nose, tummy, chin).

Walk without touching anyone else.

Walk at different levels.

Animal walks (e.g., bear, elephant, horse, puppy).

Running

The activities under Walking can apply to running.

If your space is small, the child can run:
- Around two chairs
- Along a closed path (e.g., circle, square, zig-zig)
- Up and down steps or incline.

Creative Movement Activities

How many things can you do with your hands while you are running?
- Keep them:
  - At sides of body
  - On hips
  - On head
  - Behind back

Run and stop when you hear the signal.

Run in slow motion.

Run as if you were trying to get out of the rain.

Run as quietly as you can.

Jumping

Equipment

Boxes (to jump in, out, around)
Targets (to touch as the child jumps--this promotes arm extension)
Trampoline/Mattress
Tires
Hoops (flat on floor or slightly suspended)
Steps

Activities

Jump around the room in different ways (with feet apart, feet together, on hands and feet, while turning).

Jump in different directions.

Jump at different speeds.

Jump in place.

Jump to reach a suspended object.

Jump off a low box, mattress or tire.

Jump in and out of a hoop.

Jump as far as you can.

Creative Movement Suggestions

Jump to music.

Move like a rabbit, kangaroo or frog.

Imitate popcorn or jumping beans.

Bounce like a big ball or a small ball.

Jump and land without making any noise.

Activities with Jump Ropes (help by two people)

Walk along the rope in a variety of ways.

Jump over the rope while it is held at different heights.

Run toward and jump over the rope.

Pretend to jump over a moving river.

Hopping

While the activities under Jumping can apply to Hopping, preschool children have much less power and efficiency when they hop than when they jump.

Galloping, Skipping, Sliding

The development of these skills is more complex than the others. The best way to contribute to the development of these skills is to provide music to which children can move. Recommended "skipping" rhythms are 3/4, 6/8 and 12/8. On occasion, you might take a child's hand and move with her so that she can get the feel of the rhythm.

Nonlocomotor Movements

The skills in this section form the basis for many games, particularly those played in later school years. The suggested activities emphasize ways in which children can practice each skill individually.

Catching

Equipment (most can be used for throwing, kicking and striking as well)

In addition to rubber balls try:
- Yarn balls
- Nerf balls
- Foam frisbees
- Sponges
- Small pillows
- "Chore-boys" or "chore-girls"
- Beanbags
- Rubber rings
- Tennis or ping pong balls

Choosing a wide variety of sizes, shapes and weights will increase interest.

Activities

Catch or stop a rolled ball from various body positions (e.g., with feet pointed out, cross-legged, kneeling, with one hand behind back).

Catch a bounced ball.

Catch bubbles.

Catch a ball with a scoop.

Throwing

Equipment

The following targets of different sizes and at different levels provide a variety of ways to practice throwing.

Milk container bowling pins
Block towers
Hanging hoops
Laundry baskets or wide plastic trash cans hung from the wall
Metal trash cans (or other noisy targets)
Targets painted on a wall or on sheet metal
Shapes cut from large pieces of heavy cardboard
Shapes painted on the floor or ceiling (for beanbags or other non-bouncing items).

Activities

Note: Throwing activities can be changed to rolling activities when appropriate.

Throw an object at various targets, for example:
- Throw pennies into a box.
- Stand in a circle and take turns throwing at a target placed in the middle.
- Aim at one of several targets placed at different distance points.
- Throw objects into the air and catch them.
- Throw objects with one hand or both hands.
- Throw objects underhand or overhand.
- Combine throwing with movement activities.
- Throw:
  - At different speeds
  - In different directions
  - With body at different levels
  - While walking or standing on balance beam.

Kicking

Activities

Kick an object with the toe or heel.

Kick forward or backward.

Kick from a standing or sitting position.

Kick at a variety of targets.

Kick an object between two chairs.

Kick softly or hard.

Kick an object to a partner.

Striking

Light objects are best for practicing this difficult skill. The child's hand provides the best tool for striking. Many preschoolers are not able to strike using an object (such as a paddle).

Activities

Strike a ball with the hand or fist.

Use a paddle with a ball attached to it.

Strike at a swinging target with the hand.

Keep a light object from touching the floor by hitting it with head, hands, elbows, paddles or by blowing at it through straws.

Strike a beach ball with a ping-pong paddle.

Balance

Equipment

Balance beam: the balance beam can be directly on the floor, raised, or placed on a slope.

Alternatives (in order of difficulty)

1. A wide strip of tape or a painted line on the floor
2. Unit blocks can be used to make increasingly complex paths.

Activities

Move across the beam in a variety of ways (e.g., crawl on bottom, walk forward or backward, glide).

Move across the beam with arms in different positions (e.g., held in front, sideways, overhead, behind back, on head).

Move under the beam on back or stomach.

Move across the beam while focusing upon an object other than feet (e.g., adult in front of the child, mirror on the wall, object suspended from the ceiling). (Note: It is easier to focus upon a stationary object than on one that moves.)

Turn around while moving across the beam,

Walk on the floor, alternating feet over the beam.

Hold or balance an object as the child moves across the beam.

Move around obstacles placed on the beam (e.g., block, scarf).

Step over the object or bend down and pick it up.

The balance beam also can be used in socio-dramatic play (e.g., as a bridge, ledge, curb).

Equipment

Balance Board/Teetering Board

Activities

Lie, kneel or stand on the board.

Balance on the board in any way possible.

Balance: with feet apart
with feet together
with arms out to the side
with eyes closed
while trying to catch a ball
with two people on the board
on one foot
while touching various body parts
while turning around on the board.

Equipment

Tin Can Stilts

The difficulty of this activity can be increased by using different sized cans; children can graduate from tuna fish cans to soup cans to juice cans. Be sure to check for, and tape, sharp edges.

Activities

Walk on the stilts in different directions.

Walk at various speeds.

Walk while bending or stretching.

Jump forward.

Move through an obstacle course while on the stilts.

Equipment

Scooter Board

Activities

Balance while sitting, kneeling or standing.

Lie down on the scooter board and move around the room using arms for propulsion.

Arrange children in a "train" of three or four scooter boards that have been tied together.

Equipment

Trampoline/Mattress

Activities

Walk around the trampoline/mattress.

Jump up and down.

Sit and bounce.

Balance while someone else bounces.

Do knee bounces.

Creative Movement Activities

Can you balance by touching the floor with one part of your body?

Can you twist while standing on one foot?

Pretend to walk on a tightrope.

Games

Red Light

While children line up at one end of the play area, a person designated as "It" stands 50 to 60 feet away with her back to the group. "It" calls "green light" and the children move towards her. "It" then calls "red light" and turns around to face the children. She calls out the name of any child who has not stopped completely and that child returns to the starting line.

Automobile

Each "driver" uses a steering wheel (e.g., hoop, cardboard ring). The teacher alternately holds up a red, green or yellow sign as the children "drive" along a path. An "ambulance" or "fire truck" can be included with all other cars pulling over to the side as it comes by, making a sound like a siren.

Finger Plays

A variety of finger plays can contribute to the development of body awareness.

Circle Games

Ring-Around the Rosie
Go In and Out the Window
Duck, Duck, Goose
Pop, Goes the Weasel
Drop the Handkerchief

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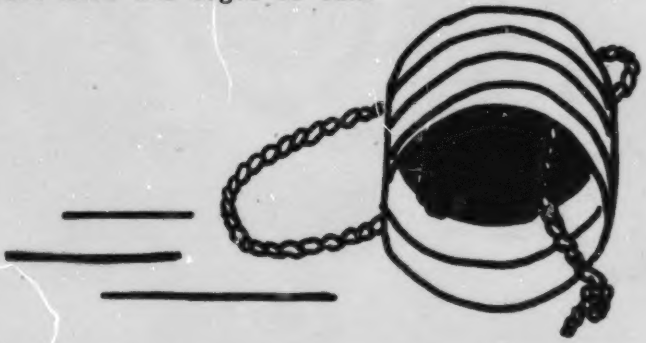
Gross Motor Equipment You Can Make

These activities can be mounted on 4" x 6" cards for easy reference.

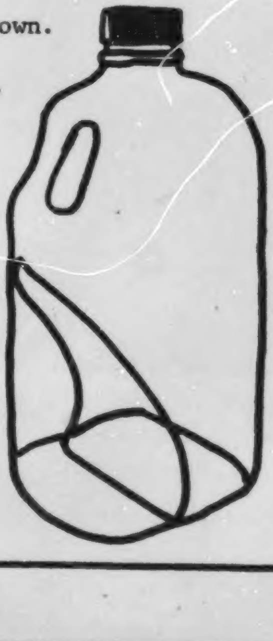
TIN CAN STILTS

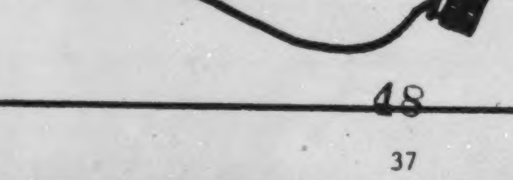
1. Punch holes in opposite sides of two tuna fish, soup or juice cans, near the closed ends.
2. Thread about five feet of rope through the holes.
3. Knot rope.
4. Put tape around knot and edges of can.



SCOOP

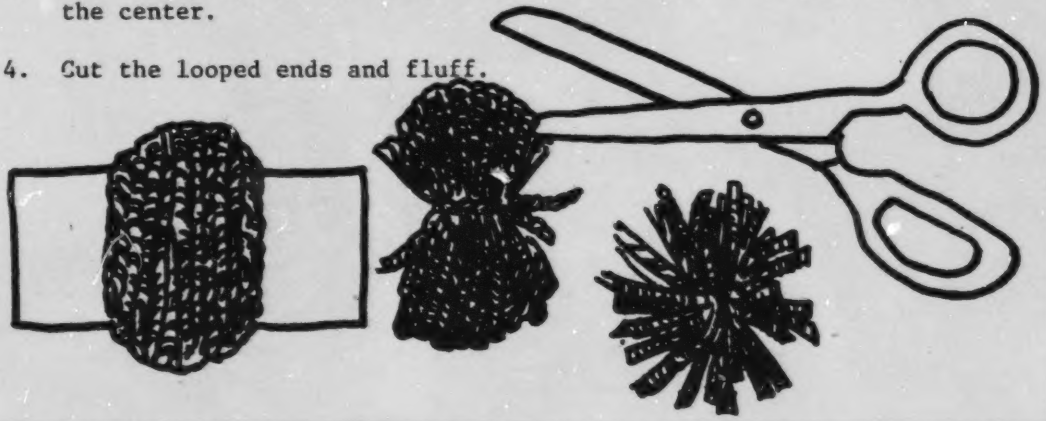
1. Clean out a 1/2 or 1 gallon bleach or milk container.
2. Cut a portion of the side and bottom as shown.
3. Place tape around the edges for protection.





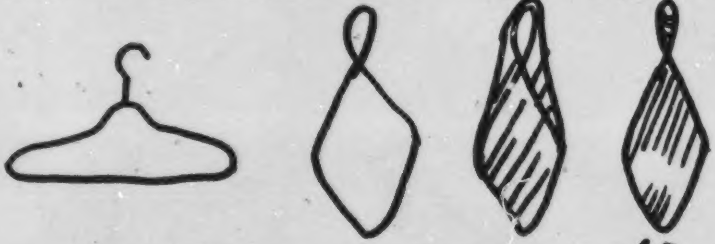
YARN BALL

1. Cut a piece of cardboard approximately 4" long and 2" wide.
2. Wrap the yarn around the long side of the cardboard until it appears full.
3. Slip the yarn off the cardboard and tie a piece of yarn around the center.
4. Cut the looped ends and fluff.



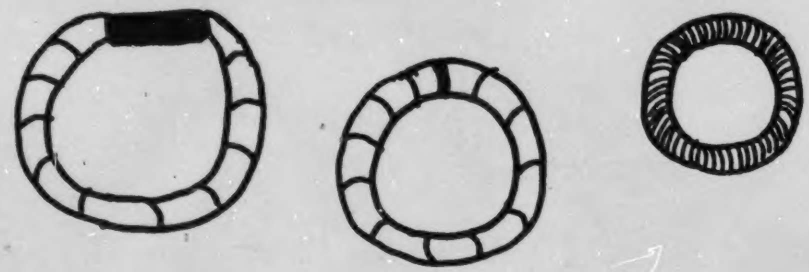
PADDLE

1. Bend a metal coat hanger into a diamond shape and straighten the hanger hook.
2. Insert the hanger into a panty hose leg, making sure to push the end of the hanger snugly into the toe of the stocking.
3. Pull the stocking tightly around the hanger and gather the loose ends by twisting them around the handle.
4. Tape the handle at the base of the diamond.
5. Bend the hanger hook to make a loop and tape at the base.



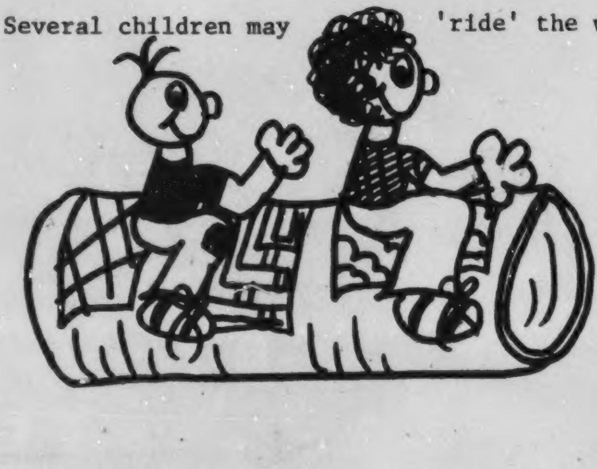
HOOP

1. Cut a small garden hose (1/8" in diameter) to desired length.
2. Join ends with a dowel and staple (cover the staples with tape).
3. It may be possible to join the ends over the dowel and have it hold without the use of staples.
4. VARIATION--Rings for "Ring Toss" can be made by cutting the hose into shorter lengths. These can also be made by cutting holes in the center of large plastic lids.



RIDE-A-WORM

1. Staple carpet pieces to a large sturdy cardboard roll to form a worm-like structure.
2. Several children may 'ride' the worm at one time.

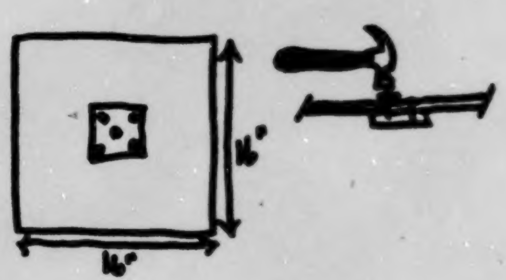


BALANCE BOARD

1. Cut a piece of 3/4" plywood into a 16" square.

2. The base may be a 3-, 4-, or 5 inch square.
(To insure durability of the base, glue and clamp together 2" x 4" boards and allow to dry. Then cut to approximate size).

3. Countersink wood screws or nails to attach the top to the base.

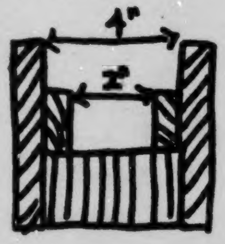


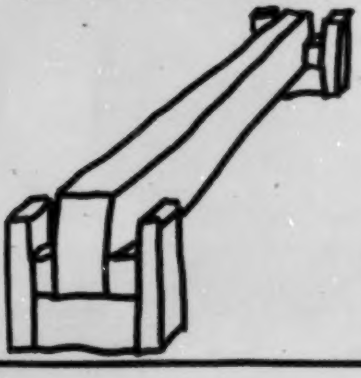
BALANCE BEAM

1. The surface may be a 2-by-4-inch board of any length, preferably at least six feet.

2. The base is made by cutting a piece of 2" x 4" board into three pieces 4" in length and attaching them as shown.

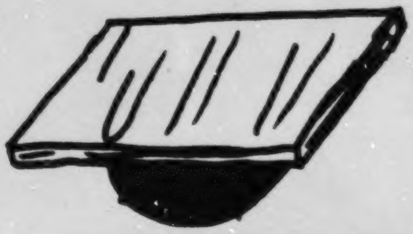
3. Two 1" x 1" x 2" boards are attached to the inside of the base as shown. This allows the beam to be placed either on the 2" side or the 4" side.





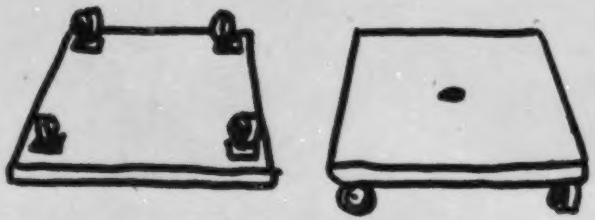
TEETERING BOARD

1. Cut a 12" x 12" board for the surface.
2. Use a half-circular piece of wood for the base.
3. Attach the base to the surface with screws.



SCOOTER BOARD

1. Cut a 12" x 12" x 3/4" piece of wood for the surface.
2. Sand the edges of the wood.
3. Attach one caster with rubber wheel on each of the four corners, using woodscrews.



TRAMPOLINE

1. Use: Old box springs.

   A truck innertube with a canvas cover.

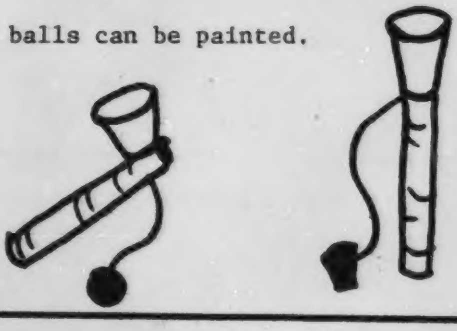
2. A commercial "Jumping Jimmy" can be purchased from:

   Flaghouse, Inc.
   18 W. 18th Street
   New York, N.Y. 10011

   It is 48 inches wide and 14 inches high. Approximate cost: $34.00

CUP-BALL GAME

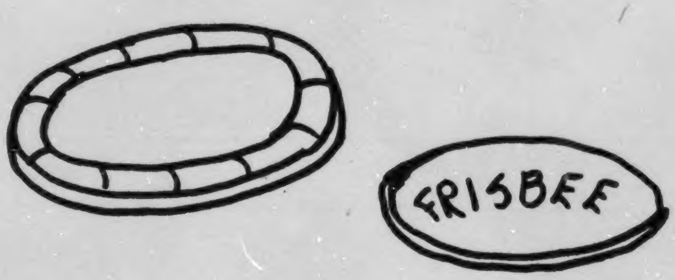
1. For the handle, cut a dowel into 5-inch lengths.
2. Tack a plastic cup onto the end of the handle; before it is completely tacked tie a piece of string around the tack.
3. Tack together completely.
4. Use a needle to attach a small ball or fishing cork to the string.
5. The handles and balls can be painted.



FRISBEES

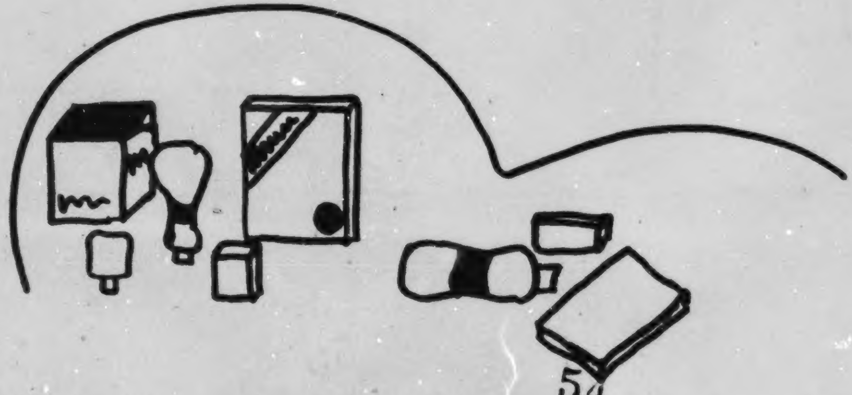
1. Use: Large plastic lids

   Circular pieces of foam rubber



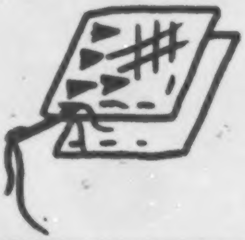
BOWLING PINS

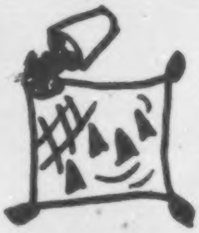
1. Use: Plastic bottles, blocks, boxes, etc.
2. Plastic bottles can be stood on the cap to make it easier for children to knock them over.

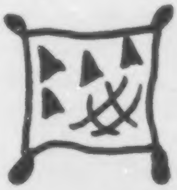


BEAN BAGS

1. Use: Scraps of material and dried peas or beans.
2. Cut two pieces of material into desired shapes.
3. Sew material together with strong thread until only a small hole remains.
4. Fill with beans and complete sewing.

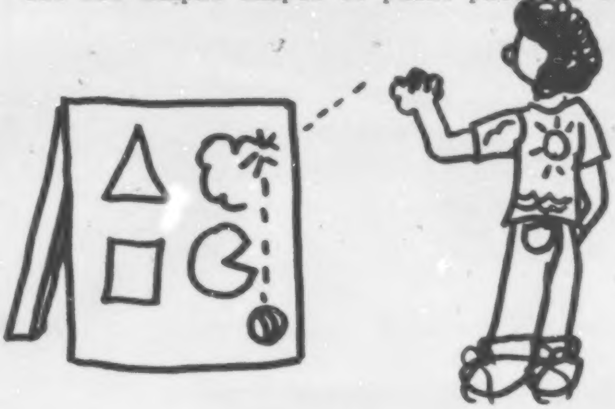






TARGETS

1. Use: Poster board, plywood or cardboard boxes.
2. Cut out simple shapes or paint pictures on the surface.



Gross Motor Activities for the Winter

Outside Cold Weather Precautions For Young Children

Children need fresh air. It helps them sleep better, eat better and enjoy a general feeling of well-being.

Properly dressed, small children can safely be outside in winter. Important to consider are:

1. A hat or hood that covers ears.
2. Mittens that are hole-free and, if possible, waterproof.
3. Boots that don't leak and, if possible, thermal socks (for example, skating socks) since many children's shoes and boots are made of vinyl which does not keep feet very warm.
4. A scarf that will help protect cheeks and lips from chapping if play area is open and windy.

In public elementary schools and nursery schools the principal or head teacher usually decides when the weather is too cold for outdoor play. Generally the rule-of-thumb is that if it is raining, snowing (more than flurries), or if the wind-chill factor is 0 degrees F or below, children are not sent outside. Preschoolers should be out 15 to 20 minutes at a time and should be active, not sitting or standing still.

Health problems that can occur from cold that might be seen in preschoolers are:

1. Chapping

   Many children have sensitive skin and some are more prone to chapping than others. A good preventive measure in children known to get chapped cheeks or lips is to apply a thin film of vaseline. For children who are observed to have chapped skin after being outside, treatment is the same. Chapping is rough, reddened, cracked or fissured skin.

2. Frostbite

   This is not likely to occur in a properly dressed child in a supervised outside play experience; however, early or first degree frostbite is possible. First degree frostbite is red, tender, may appear slightly edematous (swollen) and is most likely to occur on hands, feet, ears, cheeks, and nose. If frostbite is suspected, two important do nots are:

2. Frostbite (cont.)

   a. Do not rub frostbitten part with snow

   b. Do not expose frostbitten part to intense heat such as hot water or a radiator

   Do cover exposed area with another warm body part, for example, cover a frostbitten cheek with a warm hand or immerse in tepid (never hot) water.

Generally, a child who is healthy and well enough to attend school should be well enough to play outside 15 to 20 minutes without any ill effects. Some exceptions to consider might be:

1. Children who are recovering from a chest infection like bronchitis, pneumonia or a respiratory "flu."
2. Children who are asthmatic.
3. Children who have a cast or some orthopedic appliance that prevents wearing adequate outdoor apparel.

This handout was written by Lynn Collins Clarke

Winter Activities

These activites can be mounted on 4" x 6" cards for easy reference.

WALK IN THE SNOW

Preparation:

Why is it important to dress warmly?
What do we wear to cover our hands, feet, etc.?
What goes on first, last, etc.?

Outside:

- Take big and little steps
- Drag feet
- Step into each other's footprints
- Sprinkle salt on icy steps or walk
- Watch icicles form
- Use implements such as large and small shovels, rakes, brooms, sand box toys, etc.
- Throw snowballs at a specific target
- Catch snowflakes on jackets and examine them with a magnifying glass

WALK IN THE SNOW (Cont'd.)

Talk About:

How does your skin feel?
Why is your nose red?
What can you do to warm up?
Why aren't there any flowers?
How does the snow taste?

Back Inside:

How can we warm up faster?
Where can we put our mittens?
What happens to the mittens when they are near the radiator?
Were you warm enough outside?
What can you wear next time to stay warmer?

Serve a warm drink!

BRING SNOW INSIDE

Put snow into a large basin or water table. Wear mittens.

Explore the snow and describe how it looks, feels, tastes, etc.

Add food coloring or paint

Add cars, trucks, etc. to the snow for dramatic play

Watch the snow as it melts

Older children can record the temperature of the snow as it melts

WATCH A SNOWSTORM

(From a window)

Play music

Ask: What is the wind doing to the snow?
Where does the snow come from? (If children express interest)
What is happening to the windows?

Compare the temperature inside and outside the center

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BIRD FEEDERS

Children can make and fill feeders

Use a plastic container cut like a scoop and fill it with seeds.

Provide food by spreading peanut butter on a pinecone and rolling it in birdseed.

TREASURE HUNT

Following Footprints:

1. Have children start from the same point and carefully make a path with their footprints, each heading in a different direction.
2. Encourage them to go around trees, under fences, etc.
3. When a child finds a stopping point, have her bury a snack (in a plastic bag), turn around and trace back her footprints.
4. Exchange trails with each child following someone else's footprints until the snack is found.

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ANGELS IN THE SNOW

Variation on this popular activity:

Have children form a line and hold hands as they make "angels"

Ask:

Which angel did you make?
How can you walk without messing up your angel?
Can one person make this design?

HILLS

(not too long or steep)

Sled

Use vinyl pieces for sleds

Toboggan

Roll

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SPECIAL EVENTS

Take a field trip to Burns Park, North Campus, the Arb for hills

Have a member (e.g., goalie) of the U of M hockey team visit in uniform

Visit a skating rink

Have a parent bring in ski equipment

ART

Paint snow with tempera and brushes

Sculpt pictures on the side of a wall with packed snow

Use a stick to draw name, design or picture in the snow (can also use birdseed)

Make designs in the snow

BUILD A SMALL BACKYARD ICE RINK

1. Start with a snowbase of 6 to 7 inches. This should be as compact and smooth as possible (you can push a heavy plank over snow to level it off).
2. The base should have a very slight downhill slope for drainage when ice melts so that lawn damage is avoided.
3. Spray or sprinkle the first layer often so that ice does not build up in one spot.
4. After the first layer is applied, spread water with a 3/4" hose.
5. Apply water slowly, layer by layer; wait until the preceding layer is frozen before applying more water.
6. Apply to a depth of 3 to 4 inches for a permanent freeze.

SKATE EXCHANGE

The Ice Skate Shop
5050 Jackson Road
761-6465

Open: Monday - Saturday
10:00 - 5:30

Busiest on Saturday and after school
Carries new and used ice skates
From small beginner's skates to large sizes
Leave outgrown skates for them to sell for you and deduct $3.00 from stated price
Ace Hardware on Stadium Blvd. also has several barrels of used skates

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RESOURCES

Sources for Equipment and Supplies*

The following is a list of local sources. Most places will make a donation to your center. Please call first (a few days in advance).

Equipment/Supplies	Sources
Tires, Innertubes	Ann Arbor Tire 615 S. Main 665-6175
	Arborland Shell 3240 Washtenaw 973-1350
	Arborland Standard 3720 Washtenaw 971-1570
	Baker's Packard-Platt Shell 2995 Packard 971-3550 (Tires only)
	Bater's Gulf 9317 N. Main Whitmore Lake 449-2030 (Tires only)
	Cox Standard Service 202 N. Washington Ypsilanti 487-5420 (Tires only)
	Discount Tire Co. 3345 Washtenaw 971-3400

Most tire dealers and gas stations are willing to donate tires and tubes.

Cardboard Packing Crates	Ann Arbor Moving and Storage 7136 Jackson 769-9385
	Corrigan Moving Systems 3600 E. Ellsworth 973-9393

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*In preparing this handout a phone call was made to each source to confirm the availability and the approximate cost, if any, of materials.

Cardboard Packing Crates (cont.)	Godrey Moving and Storage 2420 S. Industrial Hwy. 769-4100 (They also sell newsprint rolls for 50¢ a pound--a great buy!) Pioneer Moving and Storage 731 N. Huron Ypsilanti 483-1508 or 994-5095 Potter Moving and Storage 573 State Circle 761-3640
Ladders	Michigan Ladder Construction 12 E. Forest Ypsilanti 482-5946 (They have used 8' parallel ladders selling for about $25.)
Sand/Gravel/Top Soil	Elliot Trucking, Inc. 2027 S. State 663-4654 Killins Sand 3305 W. Liberty Ave. 662-2519 Kruse Gravel Pit 1090 W. Clark Rd. Ypsilanti HU3-2150 Washtenaw Sand and Gravel, Inc. 4984 Earhart Rd. 668-7915 (Sand only)
Wooden Crates	Coca Cola Bottling Company 1935 S. Industrial Hwy. 665-3645 ($1.60 per 13" x 26" shell)

Wooden Crates (cont.)	Ann Arbor Fruit and Produce 529 Detroit 662-3101 (Supply is best in spring) Ascione Brothers Produce Market 407 N. Fifth Ave. Ann Arbor 665-9248 (Supply is best in spring)
Culvert/Clay Pipes (30" in diameter)	Larson Co. 35560 Goddard Romulus 941-4545 Ypsi Iron and Metal 102 Parson Ypsilanti 482-1617
Carpet/Linoleum (Discontinued samples and scraps)	Ann Arbor Carpets 550 State Circle (off State St. south of I-94) 769-1710 D-K Carpets 522 N. Maple 761-9100 (Carpets only) Schneider's Carpets 745 S. Wagner (between Jackson & Liberty) 662-9332 (Carpets only) Stadium Linoleum and Tile 2275 S. Industrial 668-6762 (Linoleum only) (If center has a particular need, you can call so that workers will bring remnants back from job.) Ypsi Floor Store 945 Ecorse Rd. Ypsi Township 668-6762

Wood Scraps

Fingerle's Lumber
617 S. Fifth Ave.
663-0581

(Carries bags of kindling for $2.60 but will donate to day care center if so identified

(Wood scrap box located near kindling)

Fingerle-Hollister-Wood Lumber Co.
822 E. Michigan
Ypsilanti 482-0735

(Go into yard-door #1 and ask where scrap box is.)

Washtenaw Lumber
304 Depot Street
Ann Arbor 482-0735

(Supply varies, but can help yourself to whatever is available in back of the mill. Ask for Harvey)

Bibliography

Bunch, W.H. "Common Deformities of the Lower Limb." *Pediatric* Nursing, 1979, 5, p. 18-22.

Caplan, F., ed. *The First Twelve Months of Life*. New York: Grosset & Dunlap, 1973. (Paperback)

A reference on general infant development, this book contains excellent descriptions of developmental milestones in the gross motor area.

Cherry, C. *Creative Movement for the Developing Child: A Nursery School Handbook for Non-Musicians* (Revised edition). Belmont, Ca.: Fearon, 1971. (Paperback)

Songs, stories and chants are grouped according to a variety of locomotor movements.

Cratty, B.J. *Perceptual and Motor Development in Infants and Children*. New York: Macmillan, 1970. (Paperback)

This text, written primarily for educators, provides a description of developmental progressions of motor skills as well as a discussion of the relationship between perceptual-motor development and motor skills. It is a good starting point for those wishing to pursue the developmental sequences of motor skills in greater detail.

Engstrom, G., ed. *The Significance of the Young Child's Motor Development*. Washington, D.C.: National Association for the Education of Young Children.

A conference group of physical educators and early childhood educators produced this series of papers which provides a rationale for increasing both observation skills and knowledge of motor development patterns.

Gallahue, D.L. *Motor Development and Movement Experiences for Young Children*. New York: John Wiley & Sons, 1976.

A good variety of gross motor activities for young children is drawn from the new movement education concepts as well as from traditional physical education practices.

Gerhardt, L.A. Moving and Knowing: The Young Child Orients Himself in Space. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

This highly theoretical approach integrates the learning of spatial concepts with movement education for young children.

Levy, J. The Baby Exercise Book. New York: Random House, 1975.

A well-illustrated presentation, this book is appropriate for use with the 0 to 15 month-old child.

Prudden, B. How to Keep Your Child Fit From Birth to Six. New York: Harper & Row, 1964.

Basic experiences are presented along with suggestions for a variety of ways to use equipment; the exercises can be modified for a more game-like approach. The safety of a few of the exercises should be carefully evaluated.

Saffran, R.B. The First Book of Creative Rhythms. New York: Holt, Rinehart and Winston, 1963.

A specific approach is presented for helping kindergarten and elementary age children to move to music. The activities are based on combining and varying the basic locomotor skills. Accompanying songs are suggested.

Stecher, M., McElhany, H. and Greenwood, M. Music and Movement Improvisations. New York: Macmillan, 1972. (Paperback)

This book describes activities for creative movement. Actual experiences with children are recorded to suggest ways to introduce and extend each activity.

Warner, D., and Quill, J. Beautiful Junk. Project Head Start, Office of Economic Opportunity. (Paperback)

Ideas and possible sources for free and inexpensive materials are listed in this Head Start publication.

Werner, P.H., and Simmons, R.A. Inexpensive Physical Education Equipment for Children. Minneapolis, Minn.: Burgiss Publishing, 1976. (Paperback)

Gross motor activites using free and low-cost equipment are suggested. Directions are provided for making both indoor and outdoor equipment.

Wickstrom, R.L. Fundamental Motor Patterns. Philadelphia, Pa.: Lea & Febiger, 1977.

Wickstrom provides a detailed account of the development of basic motor skills from walking to kicking.

Follow-Up Ideas for the Trainer

Give a Perceptual-Motor Development Workshop.

Lead a Woodworking Workshop.

Organize a working session to develop an observation checklist for gross motor development (See Appendix B).

Give consultation regarding children with difficulties in the gross motor area.

Give consultation regarding facilitation of children's participation in gross motor activities (e.g., room arrangement, types of equipment).

Organize workshops led by community resource people addressing creative movement and/or preschool physical fitness.

Suggest the center seek the help of an architect and/or students of architecture to design space and equipment for gross motor activities.

Observe in the centers to reinforce any ideas that are carried out as a result of the gross motor workshop.

Lend materials to the centers for use with the children.

Encourage centers to ask parents to contribute their skills in designing and building a gross motor area.

Sponsor a "Make It and Take It" workshop.

Ask caregivers to try one or two activities suggested at the workshop and to discuss the activities at a follow-up consultation session.

Spend a period of time at the center and model some activities for the caregivers.

APPENDICES

Appendix A

Questionnaire on Gross Motor Equipment and Practices

The following information will aid us in developing a workshop that is tailored to your interests and concerns.

1. What kind of gross motor equipment do you have?

_____ large hollow blocks
_____ saw horse
_____ ropes
_____ wheel toys
_____ climbing apparatus (e.g., ladder, slide, stairs, tires)
_____ rocking boat
_____ bean bags
_____ hoops
_____ balancing apparatus (e.g., beam)
_____ punching clowns
_____ tunnel
_____ swings
_____ see saw
_____ balls
_____ other: _____________
____
____
____

2. Do you have a separate indoor area for gross motor activities?

_____ yes _____ no

3. How often are indoor gross motor activities scheduled? For how long?

4. Are you specific activities planned for these times or is it used for free play?

5. How often and for how long do the children go outside?

6. Under which weather conditions do the children remain indoors?

7. What, if any, areas of concern do you have about gross motor activities? (e.g., lack of equipment, lack of space, would like suggestions for activities).

Appendix B

Gross Motor Development Observation Checklist

Developed with the Staff of
Washtenaw Community College Children's Center

SKILL	DATE OBSERVED				COMMENTS
Balance					
1. Stands with feet close together for 10 seconds					
2. Walks sideways across balance beam					
3. Walks forward across balance beam					
4. Walks backward across balance beam					
5. Turns on balance beam					
LOCOMOTOR SKILLS					
Position in Space					
1. Moves without bumping into obstacles					
2. Stops efficiently					
3. Can change direction on signal					
Climbing					
1. Walks down stairs holding an adult's hand					
2. Walks down stairs unassisted, 2 feet on step					
3. Walks down stairs, alternating feet					
4. Climbs ladder					
5. Climbs on gross motor equipment					
Walking-Running					
1. Walks with consistent gait and coordinated arm movements					
2. Prerun(hurried walk w/out both feet leaving ground)					
3. True run (both feet leave ground)					
4. Runs, stops, turns efficiently					
5. Rhythmic running with coordinated arm movements					

KEY

+	does do
-	does not do
+/-	sometimes

Jumping	Date Observed				Comments
1. Steps off a low object					
2. Jumps off a low object					
3. Jumps with two feet					
4. Lands on two feet					
5. Jumps forward 1-3 steps					
6. Jumps over 10" barrier					
7. Broad jumps 2'					
Hopping					
1. Stands on one foot for four seconds					
2. Hops on preferred foot 2-3 times					
3. Attempts to hop on non-preferred foot					
4. Hops 4'					
Galloping-Skipping					
1. Gallops					
2. Step-hops					
3. Coordinated skipping					
NON-LOCOMOTOR SKILLS					
Catching					
1. Stops a rolled ball					
2. Positions arms so they are ready for ball					
3. Traps thrown ball					
4. Adjusts arms to catch with hands					
5. Catches bounced ball					
Throwing					
1. Rolls ball					
2. Rolls ball at target					
3. Throws ball with hand and wrist motion only					
4. Throws with whole-arm motion					
5. Throws with forward step and body rotation					
Kicking					
1. Pushes ball with foot					
2. Kicks ball with forward motion only, maintaining balance					
3. Kicks ball with backward and forward motion					
4. Steps into kick					

KEY

+ does do
- does not do
+/- sometimes

Gross Motor Development Observation Checklist

Developed with the Staff of Little Country Schoolhouse

KEY
+ Does Do
- Does Not Do
+/- Sometimes

SKILL — DATE OBSERVED — COMMENTS

Balance

1. Stands with feet close together for 10 seconds
2. Maintains balance across 6" beam
3. Walks sideways across 6" beam
4. Walks forward across 6" beam
5. Walks backward across 6" beam
6. Turns on balance beam

LOCOMOTOR SKILLS

Position in Space

1. Moves without bumping into obstacles
2. Stops moving on signal without loosing balance
3. Changes direction on signal

Pre-Walking

1. Rolls
2. Sits
3. Crawls homo-laterally
4. Crawls cross-laterally

Climbing

1. Crawls up/down stairs
2. Scoots down steps
3. Walks down stairs, two feet per step
4. Walks down stairs, alternating feet
5. Climbs onto outdoor appartus

Walking-Running

1. Walks unassisted
2. Walks with consistent gait, coordinated arm movement
3. Pre-run: walks quickly with elevation
4. Runs without coordinated use of body
5. Runs rhythmically with coordinated arm movements

KEY

+ Does Do
- Does Not Do
+/- Sometimes

SKILL	DATE OBSERVED				COMMENTS
Jumping					
1. Steps off low object					
2. Begins jump off low object with 2 feet together					
3. Lands with 2 feet together					
4. Jumps up					
5. Jumps up and lands in same place					
6. Jumps forward with control (coordinated arm movements)					
7. Jumps over 6" - 10" barrier					
8. Broad jumps 2 - 3 feet					
Hopping					
1. Stands on right foot for 4 seconds					
2. Stands on left foot for 4 seconds					
3. Hops 2 - 3 times on right foot					
4. Hops 2 - 3 times on left foot					
5. Hops 10 feet					
Galloping-Skipping					
1. Gallops					
2. Step - hops					
3. Coordinated skips					
NON-LOCOMOTOR SKILLS					
Throwing					
1. Rolls the ball					
2. Rolls ball at a target					
3. Throws object using whole arm					
4. Throws object using full body rotation					
5. Looks at target while throwing					
Catching					
1. Stops rolled ball					
2. Positions arms to get ready for ball					
3. Traps thrown ball					
4. Adjusts arms to catch ball with hands only					
5. Catches bounced ball					

Perceptual-Motor Development

Ellen Kotlus
Carol Carter Alexander
Babette Kronstadt
Brenda Taylor

PREPARING THE WORKSHOP ON PERCEPTUAL-MOTOR DEVELOPMENT

Workshop Objectives

1. To define and explain basic terminology of perceptual-motor development.
2. To discuss how perceptual-motor difficulties can be observed in a child's approach to activities.
3. To suggest and demonstrate activities which develop perceptual-motor skills.
4. To discuss how activities already utilized in a center's program can aid perceptual-motor development.
5. To convey a philosophy indicating that school readiness training at the preschool level can be provided through everyday concrete activities.
6. To provide time for caregivers to brainstorm on uses for a basic manipulative toy (e.g., peg board, printing set).
7. To provide instructions for constructing inexpensive manipulative materials.

Materials for the Workshop

Hand-Made Materials

Gadget board*
Screw and bolt board*
Hooks and washers*
Geoboard*
Printing set*
Pegboard for lacing
Variety of nuts and bolts

Eye dropper activity*
Clothespin games*
Color viewer*
Box of objects*
Bead sequencing cards*
Scissors and materials for cutting (e.g., cardboard, crepe paper, straws, fabric)

Commercial Materials

Pull-a-Long Lacing Shoe (Fisher-Price)
Beads and Laces (Milton Bradley)
Dressy Bessy; Dapper Dan (Playskool)
Jumbo Peg Board (Whitney Brothers)
Puzzles
  Single piece (Playskool)
  Multiple piece (Playskool)
  Rubber (Lauri)
  Knob puzzle (Child Guidance)

Keys of Learning (Child Guidance)
Hardwood Shape Sorting Box (ACE)
Variety of balls
Clown (Brio)
Easy Grip Pegs and Tactile Mat Pegboard (Ideal)
Xylophone (Fisher-Price)
Rhythm Band Set (Creative Playthings)
Fit-a-Slot Builder (Lakeshore)
Stacking Cups (Child Guidance)
Stacking Barrels (Child Guidance)
The Cat in the Hat: Dr. Seuss
Bodies: Barbara Brenner
Collection of photographs from the Public Library

Additional Materials

Assorted books from the bibliography
Newsprint
Felt pens
Masking tape

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*Instructions for making these materials are provided in the handout, "Manipulative Materials to Make."

Suggested Workshop Format

Method of Delivery

In contrast to many of our workshops, the perceptual-motor development presentation contained a large proportion of formal presentation. This was necessary because of the complexity of the concepts. The formal presentation was balanced by small group problem-solving discussions, brainstorming activities with a specific manipulative material. The groups came together at the end of the workshop to share ideas.

Workshop participants said the small-group discussion not only reinforced the concepts presented during the formal presentation, but also opened their thinking to innovative ideas when planning activities around a material.

The following format proved successful in a variety of situations with groups of varying levels of sophistication. Therefore, we felt no need to vary our format greatly from situation to situation. The time allotted for inspecting books and materials on display was useful. On some occasions we scheduled browsing time at the beginning of the workshop to accomodate participants arriving late.

Time Table (90 minutes)

Time	Topic	Method of Presentation
10 minutes	Introduction	Formal Presentation
35 minutes	Basic Perceptual-motor Skills A. Laterality B. Directionality C. Body Image D. Spatial Relations	↓
	Visual Skills A. Visual-motor Coordination B. Figure-Ground C. Form Perception D. Perceptual Constancy E. Visual Discrimination F. Visual-motor Memory	↓
	Auditory Skills	

Time Table (cont'd.)

Time	Topic	Method of Presentation
15 minutes	Small Group Problem-Solving Suggested materials: Rhythm Band Set Geoboard Fit-a-Slot Builders Printing Set Pegs and Pegboard	Brainstorming ↓
15 minutes	Large Group Sharing Questions and Answers	Group Discussion
15 minutes	Opportunity to Look at Displays	Informal Browsing

THE WORKSHOP PRESENTATION

I. Introduction

During our workshops on gross motor development, caregivers frequently commented that, in addition to gaining basic information, they were reminded of how many concrete experiences they were already providing for children and of the many kinds of learning which occur through these activities. In this light, the common parental question, "What is my child learning?" becomes easier to answer. Sometimes, we need to articulate this response for ourselves.

One of the goals of this workshop is to provide that reminder as well as a framework for thinking and planning in the area of perceptual motor development. Definitions of perceptual-motor skills are often not exact. And there is a degree of controversy regarding the relationship of perceptual-motor development to school readiness and other aspects of the child's development.

In this workshop, we define a variety of concepts used in the field. There is not a great deal of consistency in the perceptual-motor literature; therefore, we use definitions which conform to our concept of development. We also suggest activities which foster development of perceptual-motor skills. Handouts list activities under each definition. While the development of skills frequently overlaps, we tried to choose activities that focus primarily on one area of development.

Specialists in the field offer differing interpretations of how children develop an understanding of perceptual-motor concepts. We believe that the two parts of the term perceptual-motor cannot be separated. It is the interrelationship between the two that enables the child to organize information and translate it into action.

A foundation for later academic skills is developed in an environment where the child can explore and experiment with her body and with materials--where she has time to receive and process information.

Most day care centers have a number of materials we suggest in this workshop, but having the materials is not enough. The materials and activities must be used in a way that is matched to the child's developmental level and that gives her the opportunity for challenge.

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Problems in the area of perceptual-motor development are usually not labelled as such even during the early elementary years. In the young child, it is unclear whether a difficulty in this area is due to slow maturation, lack of experience or the forerunner to an actual learning disability. If a preschooler has difficulty with perceptual-motor tasks, however, we can attempt to find the areas in which the problem occurs in order to provide activities at her level that will encourage development.

Towards the end of the workshop we suggest that you divide into groups to brainstorm activities around specific materials. Often, activity ideas for one material can be adapted for others and one material can also be used for the development of more than one skill. Keeping in mind that learning proceeds from simple to complex and from concrete to abstract, we can develop a repertoire of activities which will help individual children develop.

II. Basic Perceptual-motor Skills (See "Definitions of Perceptual-motor Terms")

A. Laterality

1. Laterality is an internal awareness of both sides of the body (right and left) and the difference between them.

   a. There are no objective directions in space--they are conceived in relationship to oneself.
   b. Laterality is the first step in developing this sense of direction.

2. There is some disagreement, but we believe laterality must be distinguished from handedness and naming right and left.

   a. Naming sides can be based on external characteristics rather than on internal awareness.
   b. Example: My left hand has a ring on it.

3. Laterality is important because it allows us to keep things straight in the world around us.

   a. The only difference between "b" and "d" is one of laterality.
   b. If the child has no internal sense of left and right, she cannot project it into the environment.
      1) Therefore, the directional aspects of "b" and "d" disappear.
      2) Many letter and number reversals are due to inadequate development of laterality.

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4. We learn to distinguish between the two sides of the body by experimenting with them and their relationship to one another.

5. While laterality is developing, the child also acquires an internal sense of front, back, top, bottom, horizontal and vertical.

B. Directionality

1. As laterality is developing the child starts to project her directional concepts into external space by moving toward objects. Through movement and the observation of movement, the child comes to know:

   a. Right from left;
   b. Up from down;
   c. Forward from backward, etc.

2. The difference between up and down is usually established very early in the preschool period while the understanding of left and right on oneself and others is really not expected at this time. Right and left are dependent on a firm establishment of laterality.

3. Important neurological factors contribute to the development of directionality.

   a. Control of the eyes--the child must be able to know that, if her eyes are directed toward an object at a given point, the object lies in that same direction.
   b. Crossing the Midline
      1) The child must be able to make a continuous external movement without interrupting the movement.
      2) This is a difficult task when you realize it means moving from the outside in and then reversing that process and moving from the inside out.

4. Directionality is important for reading and writing readiness. The child must:

   a. Recognize the front and back of a book.
   b. Learn the movement of left to right and up to down.

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5. Activities for laterality and directionality are:

   a. Balance activities
      1) The child learns to play one side of the body off against the other, to compensate for movement on one side with movement on the other.
      2) See "Activities That Promote Gross Motor Development."
   b. Reading books and not being reluctant to follow the print with a finger.
   c. Pat Your Tummy--song from Sesame Street

C. Body Image

1. There are no absolute clues to spatial relations in the outside world.

   a. We need a point of reference for imposing some kind of order upon our environment.
   b. We use our bodies as this point of reference.
   c. To do this, the child needs a clear, accurate and complete picture of her body and its position in space.

2. Body image is learned from the observation of movements of parts of the body and of the relationship of different parts of the body to each other and to external objects.

   a. A good body image is necessary for the initation of any movement.
   b. Laterality and directionality are highly dependent upon body image.

3. Children who have not developed a good body image may:

   a. Constantly bump into things;
   b. Have clumsy body movements;
   c. Choose too small a space or one larger than necessary when asked to find a space on the floor large enough to move her arms and legs freely in;
   d. Try to squeeze into too narrow a space;
   e. Be confused about where body parts are;
   f. Have difficulty understanding such concepts as in, out or under;
   g. Refuse to cut or make models.

4. Pregnant women are well acquainted with body image problems as they open doors into their growing stomachs.

5. Activities for body image are:

   a. Movement activities;
      1) Any kind of movement helps children learn what they can do with their bodies.
      2) See "Activities That Promote Gross Motor Development."
   b. Have children trace each other's body and decorate the parts;
   c. Read Bodies by Barbara Brenner;
   d. Help the child feel good about herself. Her feelings of self-worth will greatly affect her body image.

D. Spatial Relations

1. An understanding of spatial relations develops as we observe the relationship between objects in our environment.

   Example: between, next to, first, above, under, in front of.

2. The child arrives at this understanding through a process of development.

   a. First, she locates objects singly in reference to herself.
   b. Later, she becomes able to handle numbers of objects through a system of fixed directions.

3. A good sense of spatial relations is needed for:

   a. Puzzles, games and models;
   b. Not reversing words and numbers;
      Example: was --- saw   169 --- 961
   c. Following written words from left to right without losing the place;
   d. Recognizing configurations of words;
      Example: the cat
   e. Mathematics.

4. Activities for spatial relations are:

   a. Stacking barrels;
   b. Stacking cups;
   c. Construction activities;
      Examples: block building, woodworking.

III. Visual Skills

A. Visual-motor coordination

1. Visual-motor coordination is the child's ability to coordinate vision and movement of her body or parts of her body.

2. We will focus on eye-hand coordination, an obvious necessity for writing, drawing, copying and manipulative activities.

3. Some facility in gross motor activity is a prerequisite since development goes from the center of the body to the periphery and from gross to fine.

4. Materials for visual-motor coordination activities are:

    a. Gadget board
    b. Dressy Bessy; Dapper Dan
    c. Felt books
    d. Bolt and screw board
    e. Hooks and washers
    f. Lacing board
    g. Lacing shoe
    h. Nuts and bolts
    i. Eye dropper activity
    j. Scissors
    k. Keys of Learning
    l. Shape sorter
    m. Clothespin games

B. Figure-Ground

1. Figure-ground is the skill that allows us to focus on the pertinent aspect of the environment which becomes "figure," while the remaining aspects fade into "ground" (but are not lost to consciousness).

2. The ability to see objects in the foreground and background and to separate them meaningfully.

    Example: The child can focus on a picture on the wall and still be aware there is a door next to it.

3. Problems in this area can cause:

    a. Inattentiveness, disorganization, bumping into things, distractibility;
    b. Trouble in a room with a lot of complicated posters and displays:
    c. Difficulty in reading:
        1) Loss of place
        2) Skipping of words or sections;
        3) Inability to pick out name or a word from a group of words;
        4) Trouble doing worksheets.

4. Activities and materials for figure-ground development are:

    a. Box of objects;
    b. Puzzles;
        1) Start with pieces that outline the form rather than those with random cuts.
            a) Puzzles with knobs are easier.
            b) Try textured puzzles.
        2) Move to puzzles where the form is more striking than the individual pieces.
    c. Have children pick out objects in photographs or books;
        Example: The Cat in the Hat by Dr. Seuss.

C. Form Perception

1. Form perception is the construction of an integrated form. First, the child must be able to attend to the details in a form.

    Example: Seeing the angles and sides of a square.

2. A higher level is that of putting the details together to construct a whole.

    Example: Putting the angles and sides together to form a square.

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3. Most frequently we see children having difficulty with the higher level skill.

   a. This child is left with a mass of details that she can manipulate only one at a time or in very small groups.
   b. She is sometimes seen as impulsive, distractable or uninhibited.
      1) This is because she is responding to the elements of the situation rather than to the situation as a whole.
      2) She simply cannot take all of the factors into account at one time.
   c. She may also have problems with figure-ground relationships.
      1) She has to be able to hold on to a well-integrated and solid figure in order to keep it separated from its background.
      2) These children often become disturbed by spots and flaws on their paper which other children would not even notice.
   d. When introduced to reading, she is less likely to see words as wholes than as meaningless jumbles of details with no relationship between them.

4. The learning of form perception is built upon the development of laterality and directionality which establish the coordinates in space upon which relationships of form are built.

5. Activities for form perception are:

   a. Play "What is Missing?"; The child must consider all of the elements to solve a problem;
   b. Puzzles;
   c. Cutting and pasting.

D. Perceptual Constancy

1. Perceptual constancy can be considered on two levels.

   a. It is the ability to perceive that an object posesses unchanging properties in spite of its location or orientation in space.
      Example: A square blue block is still the same whether near or far or turned in any direction.

b. It can also be seen as the ability to make visual generalizations.
   Examples: Aa *Aa* are all "A's"
   A small green nerf ball and a large patterned rubber ball are both balls.

2. Children with difficulty in this area may:

   a. Appear anxious and/or easily confused;
   b. Become easily upset during transitions when the routine is altered;
   c. Lack the ability to make generalizations;
      Example: A Volkswagon and a taxi cab are both cars.
   d. Not be able to recognize things out of context.
      Example: We all have experienced this on occasion by seeing someone in an unfamiliar setting, such as your dentist in the laundromat.

3. Activities for perceptual constancy are:

   a. Color viewer;
   b. Experiences with different kinds of balls, chairs, cars, etc.;
   c. Flying a kite.

E. Visual Discrimination

1. Visual discrimination is the ability to detect similarities and differences in visual stimuli, such as those of size, shape and color.

2. There are a number of problems relating to visual discrimination that a teacher might notice. The child may:

   a. Not be able to identify her own property (e.g., coat, hat);
   b. Have difficulty in matching colors, shapes, letters, etc.;
   c. Not be able to note similarities and differences in a variety of situations, such as:
      1) Gross visual differences in the environment;
      2) Differences in concrete objects (e.g., a bumpy orange and smooth apple);
      3) Differences between three-dimensional forms (e.g., cone and sphere);
      4) Differences in patterns.

3. Skill in visual discrimination is necessary for reading and other school skills.

4. Activities for visual discrimination are:

    a. Matching tasks--begin with concrete objects (e.g., mittens);
    b. Clothespin games;
    c. Sorting tasks;
    d. Having children cut pictures from magazines to place on charts labelled food, animals, people, etc.

F. Visual-Motor Memory

1. Visual-motor memory is the ability to remember and reproduce a visual experience.
    a. The memory aspect of this skill is needed for learning letters and numbers as well as for sight reading and spelling.
    b. The motor aspect is needed for writing.
    c. Being able to reproduce visual experiences in a specific order is called visual sequencing.
    d. Writing your name requires all of these skills.

2. Activities for visual-motor memory are:

    a. Discussing field trips;
    b. Reproducing actions in songs like "Coming around the Mountain"
    c. Stringing beads;
    d. Copying block patterns.

IV. Auditory Skills

A. Most of the visual skills have counterparts in the auditory area. A few most commonly referred to are:

1. Auditory discrimination which is the ability to detect differences in things we hear;

    Example: Listen to the sounds of "c," "d," "b," "g," "e."

2. Auditory memory which refers to the ability to remember what is heard, such as words, numbers and stories;

3. Auditory sequential memory which is the ability to remember the order of items given orally.

B. These skills are particularly noticeable in the preschooler asked to follow directions.

C. Activities for auditory skills include:

1. Exploring how many different sounds one object can make;

2. Following directions;

3. Recalling stories told or read.

PERCEPTUAL-MOTOR ACTIVITIES IN THE PRESCHOOL

Activities that Promote Perceptual-motor Development

Laterality

An internal awareness of both sides of the body (right and left) and the difference between them. This is not the same as handedness or naming "left" and "right."

Directionality

The external project of laterality.

The ability to distingish up from down, forward from backward, left from right, etc.

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1. Balance Activities

2. Coordinating use of both sides of the body:
    - Carrying big boxes
    - Catching a ball
    - Propelling oneself across the room on a scooter board
    - Making simultaneous circles with both arms
    - Making angels in the snow

3. Reciprocal motion:
    - Riding a tricycle
    - Climbing and pulling the body hand over hand
    - Moving arms in opposite directions
    - Doing different things with both hands

4. Pretend to:
    - Row a boat
    - Steer a truck
    - Swim

5. Follow "left" and "right" footprints on the floor. Use a different color for each side.

6. Experience charts

   Have the children make up a story and write the words on chart paper. Read the story together, pointing to the words as you do so.

7. Write the child's name on her paintings, etc., drawing her attention to what you are doing.

8. Describe your own or the child's actions.

   Examples: "I saw you jump backwards."
   "I am putting the mitten on your left hand."

9. Stringing beads.

   Copy patterns that an adult or another child has made.
   Copy patterns from a card.

10. Make paper chains.

Body-Image

Having a clear, accurate and complete picture of one's own body and the space that it occupies.

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1. Creative movement:

   Examples: "How many things can your feet do while you are moving to the wall and back?"
   "How can you move just your head? Try another way."

2. Pantomime:

   Example: "How would you look if you were eating?" (Describe the child's movements)

3. Have a full length mirror available so that the children can watch themselves as they move.

4. Have the children trace each other's bodies and label and decorate body parts.

5. Assemble body parts made of cardboard, clay or felt to make a complete figure.

6. Show pictures of faces and have the children identify the missing parts.

7. "Simon Says"
   Examples: "Hold up your leg."
   "Swing your leg."
   "Tap the floor with your foot."

8. Talk about a child's visit to the doctor.
   Examples: "What did the doctor look at?"
   "How did your skin feel when she put the stethoscope on your chest?"

9. Have an adult bring in a baby for the children to play with and observe. This may lead to a discussion about such issues as proper care, hygiene, foods, etc.

10. Read Bodies by Barbara Brenner.

11. Look for ideas in "Activities That Promote Gross Motor Development". Activities requiring movement in a variety of ways and using obstacle courses are particularly good.

Spatial Relations

The knowledge of the relationship of objects to each other (e.g., between, under).

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1. Construction projects
   Examples: Building with large and small cartons
   Woodworking

2. Following directions
   Examples: "Put the block under the table."
   "Stand in front of John."
   "Climb over the balance beam."

3. Obstacle courses

4. Equipment listed under Visual-Motor Coordination (e.g., legos, pegboard, blocks)

5. Puzzles

6. Draw a "road" on the floor and have the children walk down the middle, next to it, etc.

7. Arranging objects on the shelf at clean-up time.

8. Take a neighborhood walk
   Point out a bird flying overhead, airplanes moving across the sky, cars moving in the street, people walking on the sidewalk, trains riding on the tracks, etc.

9. Describe a child's actions
   Example: "I see that you have put the red peg next to the green one."

Visual-Motor Coordination

The ability to coordinate vision and
movement of the body or parts of the body.

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1. Use of the following equipment can foster development of visual-motor coordination.
   - Gadget board
   - Dressing frame
   - Dolls
   - Peg boards
   - Lacing board, cards
   - Stacking barrels
   - Legos
   - Lincoln logs
   - Bristle blocks
   - Puzzles
   - Parquetry blocks
   - Blocks
   - Nuts and bolts
   - Bolt board
   - Screw board
   - Hooks and washers
   - Geo board
   - Clothespins

2. Cutting
   - Cut random shapes
   - Cut fringes
   - Cut off corners and edges
   - Cut around an outline

3. Tracing
   - Trace shapes in the air with a finger
   - Use templates
   - Trace with a variety of markers

4. Painting
   - Finger painting
   - Easel painting
   - Using a variety of implements

5. Pasting
6. Making models
   Using a variety of media (e.g., clay, papier mache, pipe cleaners)
7. Pouring (e.g., rice, sand, syrup, water)
8. Finger plays
9. Using tongs
   Pick up a variety of small objects from a tray (e.g., pencil, toothpicks, beads)
   Pick up an object and transfer it to a container
10. Using simple tools in construction and cooking activities.

Figure-Ground

The ability to see objects in the foreground and in the background and to separate them meaningfully.

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1. Begin with activities that draw the child's attention to concrete objects.
2. Call attention to details on a neighborhood walk or field trip.
3. Follow a path through and around objects:
   Example: Place a ladder on the floor over a design and have the child step between the rungs.
4. Find objects in the room that are blue, made of wood, etc.
5. Have the children find the small button in a pile of big buttons, the rough paper in a pile of smooth paper, etc.
6. Treasure hunts
7. "Hide-a-Thimble"
8. Have the child remove objects from a box as you name them. Gradually decrease the differences between the objects that you name.
   Example: The house with the green door, the house with four windows.

10. Have the children pick out the details in a picture
    While reading story books
    In large photographs

11. Imbedded figure puzzles (find the hidden object in the picture)

Form Perception

The ability to construct an integrated form, to bring the parts together into a whole.

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1. Play "What is Missing?"
   Children can try to figure out the missing part of an object or picture of an object.

2. Puzzles

3. Construction and modeling activities

4. Have a child disguise herself in the dramatic play area and then have the other children identify her.

Perceptual Constancy

The ability to perceive that an object possesses unchanging properties in spite of its location or orientation and also to make visual generalizations.

1. Art activities
   Example: For a pasting activity, use a group of identical shapes. The children can then make a variety of designs with the same shape.
2. Fly a kite
3. Look at objects through a color viewer.
4. Provide experience with a variety of balls, chairs, cars, etc.

Visual Discrimination

The ability to detect similarities and differences in stimuli such as size, shape and color.

1. Matching
   - Mittens, shoes, buttons, etc.
   - Pictures of objects
   - Actual objects to outline on paper or poster board
2. Playing dominoes
3. Sorting activities
4. Present a group of objects or pictures and ask, "Which one is different?"

Visual-Motor Memory

The ability to remember and reproduce what you have seen.

Visual Sequencing

The ability to remember the order or pattern of things you have seen.

1. When asking a child to get something, show the object (visual memory) rather than just naming it (auditory memory).
2. Ask a child to look at what she is wearing, close her eyes and name the items. Have two children play this game together.
3. Have the group observe what one child is wearing. That child then makes a change in appearance while everyone's eyes are closed and the group guesses what the change is.
4. After the child can name the objects in a group, remove one object while her eyes are closed. Have the child try to figure out what is missing.
5. Use activities that require a sequence of steps, (e.g., cutting, pasting, hammering a nail).
6. Sequence pictures that tell a story.
7. Make a group wall mural of a favorite story.
8. Reproduce bead and peg patterns.

Auditory Discrimination

The ability to hear likenesses and differences between sounds and between words.

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1. Have the children record their voices and try to identify each other when the tape is played back.

2. With eyes closed, the children can identify sounds that you make with different objects or parts of the body, (e.g., paper crumpling, foot tapping, window closing).

3. See how many different sounds a child can make with one object, (e.g., drum, block).

4. Record sounds that the children hear on a neighborhood walk. Upon returning to the room, try to identify each sound.

5. Make the sound of an animal and have the group guess what it is.

6. Sound discrimination game
   Using pebbles, rice, beans, etc. place equal amounts of the same substance into two containers. Distribute the containers among the group and have each child try to identify the container that matches her own.

Auditory Memory

The ability to remember what is heard.

Auditory Sequential Memory

The ability to remember the order of items given orally.

---

1. Review the events of a story that has just been read.
    Use felt figures to retell the story.
    Have the children dramatize the story.

2. Following directions:
    Example: "Find a pencil and a book and bring them to me."
    "Run to the wall and jump back."

3. Create rhythmic patterns with an instrument and have the children repeat them.

4. Pretend that you are going on a trip. The children take turns repeating what the previous child has "packed" and add another item.

Manipulative Materials You Can Make

We went to lumber yards, hardware stores, our basements, storage rooms and rummage sales to get many of the items used for making the following manipulative materials. We found that some places were willing to donate wood and hardware.

Bead Sequencing Cards

Concepts and Skills Developed

Development of small muscles
Eye-hand coordination
Visual discrimination
Directionality

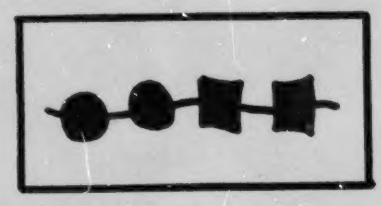
Materials Needed

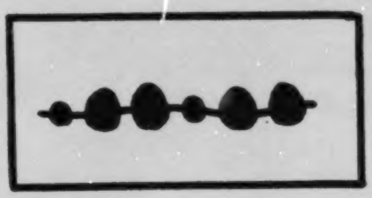
2½" x 8" Pieces of tagboard or index cards
Colored felt tip pens
Wooden stringing beads

Approximate cost: negligible (stringing beads, $5.00 - $13.00)

Instructions for Construction

Draw bead patterns of increasing complexity that can be reproduced with your set of beads.





Instructions for Use

Place sequencing cards next to the beads. Let child attempt to reproduce patterns with the beads.

Variations

1. Have children make sequencing cards for one another to reproduce.
2. After giving the child a chance to look at the sequencing card, turn it face down for a visual motor memory task.

Box of Objects

Concepts and Skills Developed

Figure-ground relationships
Visual discrimination
Classification

Materials Needed

Shoe box
Assortment of small objects from a variety store
(e.g., little farm animals, colored balloons, miniature cooking utensils, toy cars)

Approximate cost: $2.00 - $3.00

Instructions for Use

Start with just a few objects in the box and ask the child to pick out a specific one from the group. As the child's skill increases, the task can be made more challenging by adding more objects to the box.

Variations

1. Ask the child to find all of the things that go together and have her tell you about the categories she chose.
2. Suggest categories for sorting (e.g., put all of the animals together).

The Clothespin Game

Concepts and Skills Developed

Small muscle development
Eye-hand coordination
Size, shape and color discrimination
One-to-one correspondence
Observation of details

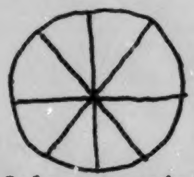
Materials Needed

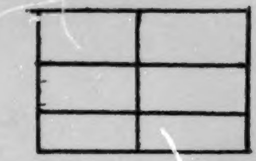
Stiff cardboard circle, square or rectangle approximately 12" x 12"
6 spring clothespins
Colored marking pens or poster paints
Shirt cardboard or plain white index cards to cut up
Scissors
Ruler
Glue or tape

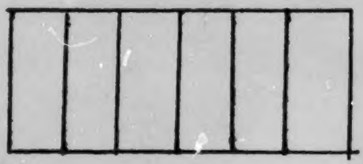
Approximate cost: negligible

Instructions for Construction

1. Measure and mark off a large piece of cardboard into 6 equal sections. Each section must border on the edge of the cardboard.







2. Color or paint each section with a different color.
3. Cut the index cards into squares, approximately 2½" x 2½".
4. Color one small square to match each section of the large piece of cardboard.
5. Tape or glue one small colored square to each clothespin, leaving the end of the clothespin visible, for the child to squeeze.

Instructions for Use

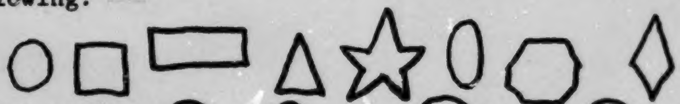
The child has two tasks--matching the colors on the clothespins to those on the large cardboard, and manipulating the clothespins to clip them onto the cardboard in the appropriate place.

The Clothespin Game (cont'd.)

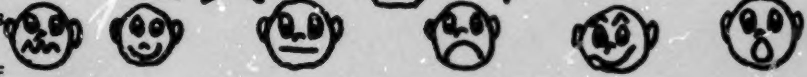
Variations

1. Make 8, 10, or 12 colored sections plus matching clothespins for a more difficult version.
2. Instead of using colors, make a matching game with any of the following:

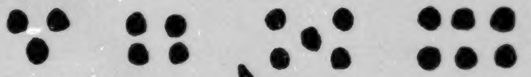
Shapes



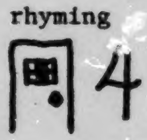
Facial expressions

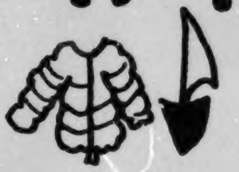


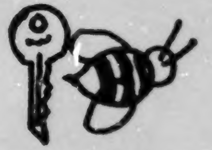
Sets of objects of different amounts

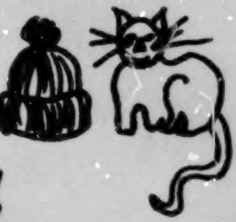


Pictures of rhyming words

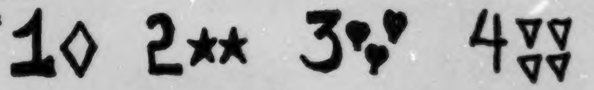






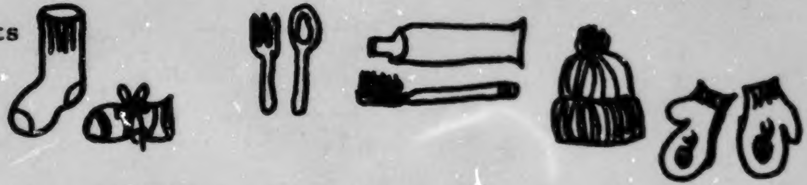


Written numerals and numbers of objects in groups



Magazine pictures (either identical pictures or related ones)

Pictures of objects which go together



Any other kinds of matching you can think of!

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Color Viewer

Concepts and Skills Developed

Perceptual constancy
Combining colors; creating new colors
Making predictions

Materials Needed

Empty can or paper cup
Colored cellophane
Masking tape

Approximate cost: negligible

Instructions for Construction

1. Cut bottom from can or cup.
2. Tape cellophane to one end.
3. If using a can, put tape around any exposed metal edges.

Instructions for Use

The child looks at objects around the room through the viewer. Talk about the objects staying the same even though they appear to be a different color.

Variation

Fit two viewers together to create a new color.

Eye Dropper Activity

Concepts and Skills Developed

Development of small muscles
Eye-hand coordination
Color discrimination
Making predictions
Combining colors; creating new colors

Materials Needed

Eye dropper
Waterproof container with a number of compartments (e.g., film can tray, egg carton)
Food coloring
Water

Approximate cost: negligible

Instructions for Use

Fill a few of the compartments with colored water. Encourage the child to transfer water from one compartment to another, using the eye dropper. New colors can be created through mixing.

Felt Book

Concepts and Skills Developed

Development of small muscles
Eye-hand coordination
Success in completing a task
Practice for buttoning, zipping, lacing, snapping, etc

Materials Needed

10 Pieces of felt (9" x 12")
Magic Markers
Material scraps
Yarn or thread
Needles
Buttons, zipper, shoelaces, snaps, barettes
Velcro
Metal rings (for holding book together)
Scissors

Approximate cost: $4.00 for felt and notions

Instructions for Construction

1. Set up a different task on each page.
2. Punch 3 holes in the felt book and insert metal rings to hold the book together.

Suggestions for Pages

1. Sew a wide piece of elastic down the middle for the child to pull.
2. Draw a car or train, using buttons for wheels.
3. Make buttonholes and attach buttons.
4. Cut out one set of shapes and a pocket to put them in. Make the outline of each shape on the page and attach a piece of velcro to each. The child can match each shape to its outline.
5. Draw a face, using yarn for hair. Attach a barette to each pigtail.
6. Attach a zipper to the outline of a jacket.
7. Attach snaps to the outline of a dress or a pair of pants.
8. Sew on or glue patches of a variety of textured materials for the child to feel.
9. Draw a traffic light and cut out circles (red, green, yellow) for the child to attach.
10. Draw the outline of a shoe and attach a pair of shoelaces.

Instructions for Use

Allow the child to turn the pages of the book, manipulating the objects and/or performing each task as she goes along.

Variations

1. Make a personalized story book about a child, incorporating the tasks as part of the story.
2. Write a simple story and illustrate it with magic markers and material scraps.

Film Can Wreaths (for infants)

Concepts and Skills Developed

Development of small muscles
Eye-hand coordination
Cause and effect
Sensory awareness (seeing, hearing, touching)

Materials Needed

8 film cans (free at most camera stores)
2-3 feet nylon string
Sharp scissors or punch for putting holes in film cans
Contac paper
Glue
Tape

Approximate cost: less than $1.00 for string and contac paper

Instructions for Construction

1. Cover sides of film cans with contac paper.
2. Punch holes in bottoms and tops of film cans.
3. Put tape on one end of string and thread through film cans. As you go along glue down each film can top except one.
4. Knot string and put inside the last film can. Glue down the lid.

Variations

Put small objects (rice, beans, key) inside film cans before gluing.

Geoboard

Concepts and Skills Developed

Small muscle development
Figure-ground discrimination
Eye-hand coordination
Creation of own patterns
Awareness of attributes such as size, shape and color

Materials Needed

1 piece of wood, approximately 7" x 7" x 3/4"
30 finishing nails, 1-¼" long
Hammer
Duct tape (2" wide) for the edges of wood
Oak tag (for pattern cards)
Hole punch
Rubber bands (different sizes and colors)
Container for rubber bands

Approximate cost, excluding wood: less than $1.00

Instructions for Construction

1. Tape all edges of wood.

2. Hammer nails 1" apart (6 rows of 6 nails in each).

3. Use 12" ruler, on end, to measure height of nails to keep them even.

4. a. Cut oak tag squares 7" x 7".
   b. Punch holes (using same measurements as for nail placement).
   c. Draw patterns for children to reproduce with rubber bands.
   d. Have blank cards available for the child to make her own designs.

Instructions for Use

Place a container of rubber bands near the geoboard with pattern cards. The child proceeds by placing rubber bands around the nails in any way she chooses.

Variations

1. Use rubber bands of the same color.

2. Make specific shapes with rubber bands.

3. See how many shapes the child can create on the board.

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Hooks and Washers

Concepts and Skills Developed

One to one correspondence
Size discrimination
Development of small muscles (particularly in picking up and manipulating small washers)
Eye-hand coordination
Classification

Materials Needed

1 piece of plywood approximately 15" x 20" x 3/4"
12-18 Hooks of various sizes (small--5/8", medium--5/16", large--7/16")
Duct tape for edges of wood
Awl or drill to start holes
Container for washers

Approximate cost: $2.30 for hardware

Instructions for Construction

1. Tape ends of the board to decrease splintering.
2. Start holes for screws, using awl or drill, making a random pattern.
3. Screw in hooks, keeping hooks of different sizes randomly distributed.

Instructions for Use

Place the container of washers near the hookboard. Let the child match washers with hooks according to size. This activity is not self-correcting.

Variations

1. Make a board using one size hook and washer.
2. When making the board, use graduated sizes, placing smallest hook on left and largest on right.

Lacing Board

Concepts and Skills Developed

Eye-hand coordination
Learning to think ahead and make predictions
Comparing and making judgements
Development of small muscles
Experiencing success in completing a task
Providing practice for lacing shoes

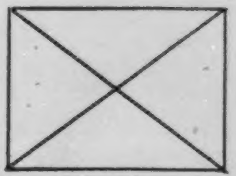
Materials Needed

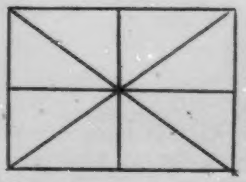
1 piece of plywood 15" x 16" x 3/4"
22 screw eyes
6-7 feet nylon string (burn ends or dip in clear fingernail polish to make ends hard)
tagboard
hand drill
awl or drill to start holes

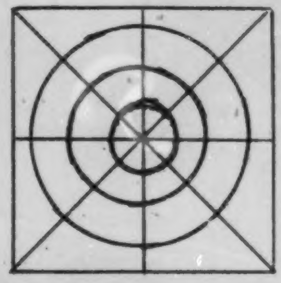
Approximate cost: screw eyes--\$1.20 nylon string--4¢ or 5¢ a foot

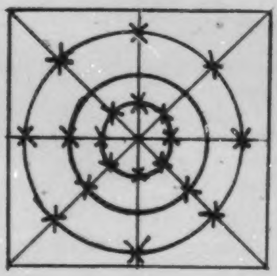
Instructions for Construction

1. Tape ends of the board to decrease splintering.
2. Draw two diagonal lines across the board from the corners to make an X.
3. Draw two more lines, cutting the X in half.
4. Draw three concentric circles spaced 2" apart.
5. Mark 22 dots at intersections at lines and circles.
6. Drill 22 holes just deep enough to start screw eyes.
7. Place screw eyes in holes.









Instructions for Use

The child laces nylon string in and out of the screw eyes. She can create her own patterns and designs with strings. String of different colors can be used.

Variations

Use tagboard cut to fit over the lacing board to make designs for children to duplicate.

Mobile (for Infants)

Concepts and Skills Developed

Gross motor movements of arms and legs
Tracking moving objects with the eyes
Sensory awareness (seeing and hearing)

Materials Needed

- Paper plate
- 8 pieces of yarn cut the same length
- Things to hang from the yarn
  - Magazine pictures glued to cardboard
  - Felt shapes stuffed with cotton
  - Feathers
  - Bells
  - Empty thread spools
  - Painted clothespins
  - Tassels or other fabric trim
- Metal ring

Approximate cost: negligible

Instructions for Construction

1. Make 8 evenly spaced holes around the edge of the paper plate.
2. Attach decorations to four pieces of yarn and hang from every other hole in the plate.
3. Tie a piece of yarn to each remaining hole and then attach the yarn to a metal ring for hanging.

Instructions for Use

Hang the mobile low enough to the crib so the baby can easily follow the movement of the objects but not low enough so the objects can be pulled off.

Printing Set

Concepts and Skills Developed

Manipulation of objects
Figure-ground discrimination
Opportunity to make patterns
Combining colors; creating new colors
Opportunity to reproduce patterns
Increased awareness of color and shape

Materials Needed

Inch cubes, wood scraps, wooden spools
Hardware (e.g., nuts, bolts, washers)
Keys
Cork
Pieces of rubber (cut into a variety of shapes)
Elmer's glue
Stamp pads, tempera paint and sponges
Boxes for storage of each set of implements
Magic markers for color-coding
Variety of paper and cardboard for printing

Approximate cost: varies according to materials selected.

Instructions for Construction

1. Glue a variety of objects onto wood.
2. Make up a color-coded set for each color paint or stamp pad.

Instructions for Use

The child selects a shape, presses it onto a stamp pad or paint-soaked sponge and presses the shape onto paper to reproduce or create a design.

Variations

1. Using a paper towel roll as a base, the child can make individual rolls of wrapping paper.

2. Decorate wide strips of oaktag that can be folded and used for writing (dictating) letters.

Puzzles

Concepts and Skills Developed

Development of visual memory
Development of persistence and patience
Ability to take apart and put things together
Opportunity for the child to perceive part-whole relationships
Development of discrimination by using size, shape and color as cues

Materials Needed

5 uniform wood scraps (approximately 1" x 7" x 1-3/4")
Magazine pictures
Elmer's glue
Exacto knife or any very thin razor-edged implement
Clear spray enamel or Krylon (note: should be sprayed outside by adult only)

Instructions for Construction

1. Put five pieces of wood together so that the ends are even.
2. Glue an appropriate-sized picture across all five pieces of wood.
3. After the glue dries, cut through the picture using the slit between wood pieces as a guide.
4. Spray with clear spray enamel or Krylon.

Instructions for Use

The child manipulates and places pieces of wood together until the picture appears in its correct form.

Variations

1. Draw picture directly onto wood.
2. Saw strips in half, making a 10-piece puzzle.
3. Use blown-up photographs of children.
4. Put a picture on both sides of wood.
5. Use wood scraps that fit together.
6. If a parent has a jigsaw, use a sheet of wood.

Screw Board

Concepts and Skills Developed

Size discrimination
Ability to make predictions
Small muscle development used in writing
Comparison
Use of a screwdriver
One to one correspondence
Language skills extended by comparative use of the following words: same, different, small, medium, large

Materials Needed

1 piece of wood 1-½" x 3-½" x 2"
Drill
Epoxy glue
9-10 stove bolts of three different sizes with matching nuts
4" short-handled screwdriver
Container for stove bolts and screwdriver

Approximate cost: Hardware: $2.25 (Cost varies depending on store and size of bolts used.)

Instructions for Construction

1. Drill 9-10 holes deep enough for stove bolts to fit into.
2. Space holes evenly across board.
3. Set in and glue appropriate nut.

Instructions for Use

The child screws each metal screw into the matching nut on the board with screwdriver. This activity is self-correcting.

Variations

1. Use regular bolts instead of stove bolts.
2. Make board, using only one size nut and bolt.
3. Children can pair up and do this activity. This not only promotes cooperative behavior but can also provide for very interesting conversation that can be recorded on a tape recorder.
4. When children develop a skill, they might enjoy timing themselves by using a stopwatch to time the process of putting in each screw.
5. Some children might want to count the number of turns it takes different sized screws to go into the board.
6. At a very advanced level, decrease the difference between the size of the bolts or use the same sized nuts and vary the length of the bolt.

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RESOURCES

Definitions of Perceptual-Motor Terms

Laterality	An internal awareness of both sides of the body (right and left) and the difference between them.
Directionality	The external projection of laterality. The ability to know up from down, forward from backward, left from right, etc.
Body Image	Having a clear, accurate and complete picture of one's own body and the space that it occupies.
Spatial Relations	The knowledge of the relationship of objects to each other (e.g., between, under).
Visual-Motor Coordination	The ability to coordinate vision and movement of the body or parts of the body.
Figure-Ground	The ability to see objects in the foreground and in the background and to separate them meaningfully.
Form Perception	The ability to construct an integrated form, to bring the parts together into a whole.
Perceptual Constancy	The ability to perceive that an object possesses unchanging properties in spite of its location or orientation and also to make visual generalizations.
Visual Discrimination	The ability to detect similarities and differences in visual stimuli such as size, shape and color.
Visual-Motor Memory	The ability to remember and reproduce motorically what you have seen.
Visual Sequencing	The ability to remember the order or pattern of things you have seen.
Auditory Discrimination	The ability to hear similarities and differences between sounds.
Auditory Memory	The ability to remember what is heard.
Auditory Sequential Memory	The ability to remember the order of items given orally.

Developmental Sequences of Basic Fine Motor Skills

	MANIPULATIVE	ART	BLOCK BUILDING	WRITING
1 year ↓ 2 years	Can pick up and hold two small objects in one hand Turns pages of book 2 or 3 at a tim Turns radio knob Folds paper once in imitation Turns pages of book singly Turns door handles	Holds crayon in fist Scribbles in repetitive radial or circular patterns Uses a variety of scribbling patterns in various positions on page	Builds tower of 2 one-inch cubes Builds tower of 5 or 6 one-inch cubes	Holds crayon adaptively Marks with pencil Scribbles spontaneously Begins to show hand preference
↓ 3 years	Manipulates egg beater Unzips zippers	Can roll, pound, squeeze and pull clay Enjoys finger painting Paints strokes, dots and circular shapes on easel Makes small cuts with scissors	Lines up two or more blocks	Imitates horizontal line, vertical line and circular stroke Holds crayon by fingers Imitates V and H strokes
↓ 4 years	Picks up pins, thread, etc. with one eye covered Drives nails and pegs Unbuttons accessible buttons Strings four beads Can close fist and wiggle thumb in imitation	Figures placed in simple combinations Holds crayon with fingers Draws more than two figures combined Draws "suns"	Builds tower of 9 one-inch cubes Imitates building of bridge with cubes	Copies circle Imitates cross Traces diamond Copies cross
↓ 5 years	Imitates folding and creasing paper three times Folds triangle from paper 6" square in imitation Buttons four buttons	Draws simple human figures Draws simple house Draws crude boat and cars	Builds tower of 10 or more one-inch cubes	Copies V and H Prints a few capitals Holds paper with other hand when writing Copies star, square and cross Copies rectangle with diagonals Copies triangle
↓ 6 years ↓ 7 years	Ties shoe lace	Does better drawings of cars, airplanes, boats, etc.		Prints first name Writes a few letters spontaneously Frequently reverses letters, especially 'S' Prints numbers 1-5 Copies diamond

Development of Grasp and Release

Birth	Swipes at objects Begins raking with middle, ring and little fingers Begins development of voluntary release Isolates index finger Has radial grasp (thumb, index, and ring fingers)
1 Year	Has pincer grasp (thumb-finger opposition) Has gross grasp of tools; holds peg in whole hand
	Begins to put index finger on shaft of peg
2 Years	Holds crayon with thumb on one side, fingers on other Releases objects using whole hand
	Controls writing motion with whole arm
3 Years	Has trouble with lacing cards because of not being able to let go of lace
4 Years	Releases well without excessive pressure or finger extension Develops good pencil grasp
5 Years	
	Arm and wrist still play some role in writing motion
	Has reasonable ability to touch each finger in turn to thumb
6 Years	
7-8 Years	Most normal children can perform finger-thumb opposition tasks well

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Follow-Up Ideas for Trainers

Lead a Gross Motor Development Workshop.

Organize a "Make-it and Take-it" Workshop for manipulative materials.

Give the Woodworking Workshop.

Offer consultation on children with difficulties in the perceptual-motor area.

Lead a working session to develop a method for observing children's behavior systematically (see the Appendix for an example).

Offer consultation on facilitating children's participation in perceptual-motor activities (e.g., room arrangement, presentation of activities).

Sponsor a workshop on learning disabilities and services available in your community.

Observe in the center and reinforce workshop ideas being carried out in the program.

Loan out equipment and books to the center.

APPENDIX

Fine Motor Development Observation Checklist

Developed with Staff of Washtenaw Community College--Children's Center

Skill	Date Observed				Comments
Feeding					
1. Feeds self with spoon (many spills)					
2. Picks up and drinks from cup (some spilling)					
3. Chews well					
4. Drinks from cup without assistance					
5. Eats with spoon independently (entire meal)					
6. Unwraps sandwiches					
7. Uses fork					
8. Pours drink without spilling					
9. Cuts with knife					
Dressing					
1. Removes garment intentionally					
2. Imitates grooming activities with various objects					
3. Undresses completely except for fastenings					
4. Attempts to put clothes on					
5. Unzips zipper					
6. Puts on simple clothes without assistance					
7. Puts on coat (except for buttoning)					
8. Zips zipper					
9. Unbuttons buttons					
10. Buttons buttons					
11. Puts coat on independently					
12. Laces shoes					
13. Ties shoes					

+ Does Do
N.O. No Opportunity to Observe
- Does Not Do

	Date Observed				Comments
Blocks					
1. Builds horizontal and vertical rows					
2. Builds bridges					
3. Builds enclosures					
4. Makes decorative patterns using symmetry					
5. Names buildings					
6. Uses blocks in imaginative play with other objects and toys					
Manipulative					
1. Places one or two pegs in board					
2. Builds two cube tower					
3. Turns pages of book two or three at a time					
4. Turns pages of book singly					
5. Drives pegs into work bench					
6. Puts circle in shape sorter					
7. Strings four large beads					
8. Pounds nails in wood					
9. Builds tower of ten or more cubes					
10. Folds and creases paper					
11. Uses sewing cards, following lines correctly					
Scissors					
1. Attempts to hold scissors					
2. Cuts random shapes					
3. Cuts fringes					
4. Cuts off corners					
5. Cuts general shape					
6. Cuts out shapes with attention to detail					

+ Does Do
N.O. No Opportunity to Observe
- Does Not Do

Skill	Date Observed				Comments
Drawing-Writing					
1. Holds crayon appropriately					
2. Makes random marks					
3. Imitates horizontal and vertical lines					
4. Draws circular shapes					
5. Copies circle					
6. Copies cross					
7. Draws a person with two parts					
8. Draws simple house					
9. Prints first name					
10. Draws recognizable person with head, trunk, legs, arms and features					
11. Copies diamond					

+ Does Do
N.O. No Opportunity to Observe
- Does Not Do

Woodworking

Carol Carter Alexander
Ellen Kotlus
Babette Kronstadt
Brenda Taylor

PREPARING THE WORKSHOP ON WOODWORKING

Workshop Objectives

1. To describe a logical sequence in which to introduce woodworking tools and skills that children at various levels of development would be likely to acquire.
2. To explain the proper use of woodworking tools.
3. To provide an opportunity for caregivers to experiment with construction materials (e.g., wood scraps, tools, spools, styrofoam).
4. To present ideas for organizing a woodworking area.
5. To discuss the adult's role in facilitating woodworking activities.
6. To provide information on safety issue[illegible]volved in construction activities.
7. To suggest possible sources for woodworking materials.
8. To discuss the relationship of woodworking activities to other areas of the curriculum.

Materials for the Workshop

Tools

Hammers	Saws	C-clamps
1 - 7 oz.	1 - 20 "	2 - 4"
1 -16 oz.	1 - 22"	1 - 3"
	1 - 26"	1 - 2"
		2 - 1"

Hand drill and bits
Brace and bit
Surform plane
Phillips screwdrivers
Magnet
Pliers
Sandpaper blocks
Commercial tool kit with tools

Materials for Projects

- Sandpaper (assorted grades)
- Nails (#4, #6, roofing)
- Screws
- Phillips screws
- Scissors
- Assorted scraps
  - wood
  - ceiling tile (non-asbestos)
  - wall board
  - plywood
  - particle board
- Cardboard
- Fabric scraps
- Felt pens
- Yarn
- Straws
- Cork
- Macaroni
- Sawdust
- Tree trunk
- Styrofoam
- Carpet squares
- Felt squares
- Golf tees
- Clothespins
- Popsicle sticks
- Toothpicks
- Bottle caps
- Meat trays
- Wheat paste
- Plaster of Paris
- Measuring cup
- Bowl
- Tape
- Elmer's glue
- Tempera paint
- Paint brushes
- Cans and shoe boxes for storage

Additional Materials

3 - 2' x 4' pieces of masonite to protect tables

Assorted books from the bibliography
Newsprint
Felt pens
Masking tape
Samples of children's woodworking
Safety poster

Suggested Workshop Format

Method of Delivery

The key to the success of the woodworking workshop was the time we allowed for the participants to explore the materials we talked about. The time we spent gathering the tools and materials and setting up the room was well worth the effort. We set up areas for taping and glueing, for sawdust modeling and for actual woodworking. Large pieces of masonite clamped to tables provided reasonable workbenches. The workshop leaders circulated among the participants offering suggestions and reinforcing points made during the formal presentation. The posted safety rules were observed at all times.

Initially, we explained in the introduction the relationship between woodworking and child development in other curriculum areas. As a change of pace, we decided to have the participants provide the explanation after they had the opportunity to try some of the woodworking activities. Sheets of newsprint were posted, each headed either by an area of development or a curriculum area (e.g., social-emotional, math). The results of the participants' brainstorming can be seen in the Appendix. This proved to be a good technique for encouraging participation since everyone was responding on the basis of a very recent, common experience. The participants were also able, in this way, to provide their own closure for the workshop. The workshop ended with active rather than passive participants. We hoped their level of energy would carry over to generate planning for woodworking activities for children.

Time Table (90 minute workshop)

Time	Topic	Method of Presentation
5 minutes	Introduction	Formal Presentation
40 minutes	Basic Woodworking Tools	↓
	Materials for Woodworking	
	The Adult's Role in Woodworking Activities	
30 minutes	Exploration of Materials	Participation in Children's Activities
15 minutes	Large Group Sharing Questions/and Answers	Brainstorming

THE WORKSHOP PRESENTATION; WOODWORKING BASICS

I. Introduction

Woodworking is an area that is often ignored in preschool programs. This may be partly because we, as adults, are not comfortable using tools. It may also be because of the fear that children will get hurt. In this workshop, the focus is on woodworking as an activity that can be fun for children and adults and can foster many types of learning. However, in all of these activities close supervision and absolute adherence to safety rules is of the utmost importance.

During this workshop we consider a number of questions related to the use and presentation of basic tools and to the role of the adult in facilitating woodworking activities in a day care center. We suggest that you take some time to work with the tools and materials and to wrestle with some of the same opportunities for problem-solving that the children will encounter. As you are doing this, keep in mind the categories of child development and learning we have listed on newsprint: social-emotional, sensory, problem-solving, gross motor, perceptual-motor, math, science, language and social studies. At the end of the workshop we will share ideas on the kinds of learning that take place within these categories while participating in woodworking activities.

II. Basic Woodworking Tools

(Don't use toys. Children need real tools, both for quality workmanship and to learn the balance and the proportion of the tool.) Begin by showing children how to hold materials in a stationary manner, then introduce one new tool at a time in the order in which they are listed.

A. Use the following to hold wood whenever children saw or drill:

1. Carepenter's vise: The vise is bolted or screwed onto the workbench and has a 3½" to 4" jaw.
2. C-clamp: The C-clamp is portable and has a 4" to 6" opening.

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B. Hammer:

1. Use the bent claw type; one with a drop-forged head is safest.

2. A weight of 10 to 13 ounces is generally recommended.

   a. It takes more--not less strength to work with a light-weight hammer.
   b. If the hammer is too heavy, the children will hold it too close to the head and will not get good leverage.

3. You need one hammer for each child using the woodworking area at one time.

4. To use:

   a. You get maximum leverage and power by holding the hammer where the handle begins to thicken.
      1) A hammer held near the head is safe but will not have much force.
      2) Encourage children to gradually move their hands away from the head but understand that in doing this some of their control will be sacrificed.
   b. For beginners:
      1) Adults can start the nail.
      2) Teach the child to lay the nail down on the wood and gently hit the head. It makes a groove into which the child can then put the nail for an easier beginning.
   c. When the child starts a nail, have her hold it in the middle; this protects fingers and prevents the nail from going in crooked. Have her:
      1) Tap the nail in until it sticks.
      2) Then remove fingers and wham it!
   d. To remove a nail without bending it, put a scrap of wood against the nail almost to the nail head. Place the hammer head on the wood scrap as you hit the nail into the groove of the claw and rock it back and forth.
   e. A tree stump is perfect for beginning hammering. The grain is such that it is practically impossible to hammer crookedly.

B. Screwdriver

1. You need assorted sizes to match up with screws.
    a. Screwdrivers 4" to 6" long with a ¼" or larger blade are preferable.
    b. Slotted head screwdrivers are easier to use with appropriate screws.

2. Practice screwing into ceiling tile at first.

3. With skill, the teacher or child can start the hole with a nail or hole punch.

4. Use a screw board for practice.

C. Saw

1. Types
    a. Crosscut (recommended)
        1) The teeth on this saw are filed so they will cut in both directions.
        2) Use an 8 to 10 point saw (8 to 10 teeth/inch); the fewer the teeth the faster and rougher the cut.
        3) Length:
            a) A 16" saw seems best but is hard to find.
            b) You can use a 12" saw (from Childcraft).
            c) A 20" saw is difficult for children to control.
        4) The saw should be sharp--blunt saws are more dangerous because they require greater force for cutting. (Caregivers should use each tool periodically to make certain it is in good working order.)
    b. Back saw (not recommended). This saw has a stiff back and is too hard for a child to use.
    c. Coping saw (not recommended). Coping saw blades break too easily for preschool use.

2. You may not want to introduce the saw to your youngest (2½ to 3-year-old) children.

3. To use;

   a. You may wish to have the child show you where she wants to cut and draw a pencil line at that spot. The line will help the child continue sawing at the same spot.
   b. You may also want to start a slot (make the first 1-3 cuts) for the child.
   c. Always hold the wood in a vise or C-clamp. Do not allow it to be held by another child or adult.
   d. Although adults use a hand on the wood to guide sawing, children should only put their hand on the wood on the side of the C-clamp away from the saw cut.
   e. Start the cut at the butt of the blade, then pull the saw toward your body. Get into the rhythm of "push hard, pull easy."
   f. The child should stand with her feet slightly apart with one foot forward so she can shift her weight from foot to foot.
   g. A saw works best when it is held at a 45 degree angle but the child may begin by holding it level.
      1) It is important to keep the saw straight, not bent.
      2) Shorter children may need to stand on some sort of platform to be in the proper position for cutting.
   h. The cut should be as close to the clamp or vise as possible without inhibiting movement.
   i. This is a good time to observe the child's level of experience and skill.

D. Sandpaper

1. Have assorted grades from #1 - #100.

2. Tack the sandpaper to a small block for easy use.

3. Sanding is easier if the wood is held in a vise or clamp.

E. Drills (There is some dispute over which is easier to use.)

1. Brace and Bit (This can make larger holes than a hand drill but should only be used on wood.

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a. Use the ratchet type which allows motion in only one direction.
    1) This drill comes with different size bits; 3/16" to 1" in 1/16" increments (#5 size is 8/16" or 1/2").
    2) Get one with a 6" to 8" sweep.

b. To use:
    1) Put the wood in a vise or clamp.
    2) You can hold the tool vertically while the child moves the handle, or
    3) The child can rest the drill handle in her stomach, lean into the wood and turn the handle. If the table moves with this method, put it against the wall.

2. Hand drill:

    a. The hand drill works like an egg beater and requires a smaller movement than a brace and bit.
    b. The maximum bit size for this drill is 1/4", 3/8", or 1/2" depending on the drill.
    c. It can be used on wood or cardboard.

F. Wood rasp:

1. The rasp is used to smooth wood.

2. It is 1/4" to 1" wide, 8" to 10" long and is much safer than the plane, which is not recommended for preschoolers.

3. A surform plane can also be used to smooth wood.

G. Pliers

1. Pliers 5-1/2" to 7-1/2" are best.

2. Pliers are most likely to be used for repairs in the center.

H. Additional supplies for woodworking:

1. Rulers and/or tape measures;

2. Paint brushes;

3. Magic markers;

4. Fat brushes;

5. Magnets--for picking up nails.

III. Materials for Woodworking

A. Wood

1. Get scraps from lumber yards or carpenters--sort them for use in woodworking and other activities (e.g., glueing).

2. Soft woods are best for woodworking:

   a. White pine, basswood and spruce are the most commonly available types.
   b. Poplar, fir and cedar are also good.
   c. Check for splinters and the direction of the grain. The grain should run lengthwise (horizontally) or the board will be prone to split.

3. Hardwood, redwood and plywood scraps with the grain running crosswise and scraps with knots can be used for glueing.

B. Other Basic Materials (especially for beginners):

1. Styrofoam--This should not be sawed because the dust produced should not be inhaled.

2. Tree trunks for hammering nails;

3. Thick corrogated cardboard;

4. Wallboard;

5. Ceiling tile (not asbestos);

6. Peg Board (for glueing and taping);

7. Formica (for glueing and taping);

8. Press board, particle board (for glueing and taping).

C. Wooden Dowels:

1. Buy assorted sizes.

2. Dowel sizes correspond to drill bit sizes so dowels can be put into drilled holes for chimneys, smokestacks, legs, etc.)

D. Nails

1. Have an assortment of nails sorted by type and and size:

    a. Common nails: the more expensive nails are usually harder and a better buy.
    b. Box or wire nails are thinner than common nails so they are not likely to split wood.
    c. Roofing nails have large heads but are rough and hard to pound into wood.
    d. Finishing nails have small heads.

2. Have nails of different lengths:

    a. For holding two pieces of wood together, the nail should be 3/4 of the total thickness of the wood.
    b. Shorter nails can be used for decoration or to represent other things (e.g., furniture legs, fence posts, door knobs).

3. Nails are cheapest when bought by the pound. You can order them by pennyweight (d's) (2d = 1", 4d = 1-1/2", 6d = 2", 8d = 2-1/2").

E. Screws

1. Have a variety available.

2. Flat heads are easier to screw than round heads.

F. White Glue--avoid quick drying glues as they can be dangerous.

G. Paint and Other Finishes for Wood:

1. Powdered tempera paint mixed with milk;

2. Powdered tempera paint mixed with wheat paste;

3. Water based acrylic paint;

4. Crayons;

5. Magic markers;

6. Water colors.

H. Miscellaneous

1. Things to wind around nails or wood pieces:

    a. Yarn;
    b. String;
    c. Rubber bands;
    d. Wire;
    e. Twist ties;
    f. Thread;
    g. Pipe cleaners.

2. Things to nail, paste or string onto wood:

    a. Material scraps;
    b. Thin pieces of styrofoam (e.g., meat containers, styrofoam cups);
    c. Tongue depressors;
    d. Popsicle sticks;
    e. Cut-up plastic straws;
    f. Pieces of milk cartons;
    g. Bottle tops (the teacher can hammer the initial hole);
    h. Soft-plastic tops;
    i. Cork;
    j. Peg board in small pieces;
    k. Masonite;
    l. Formica;
    m. Film cans;
    n. Ribbon;
    o. Aluminum foil;
    p. Feathers;
    q. Paper towel or toilet paper tubes;
    r. Buttons;
    s. Spools (can be hammered on but usually require a washer right under the nail head);
    t. Bobbins;
    u. Beads;
    v. Macaroni.

3. Things to bang into styrofoam:

    a. Golf tees;
    b. Tooth picks.

IV. The Adult's Role in Woodworking Activities

A. Safety

1. Making certain that the children work safely is one reason the woodworking area should never be left unsupervised.

2. There should be a set of safety rules of which everyone is aware (see "Safety Rules for the Woodworking Area").

    a. Pictures representing the rules can be posted in the woodworking area.
    b. Discuss the rules with the children before any actual woodworking activity takes place.
        1) Explore the tools during small group time; describe how they are used.
        2) As a group, look at books related to woodworking (see "Books for Children").
    c. Repeat the rules as you show the children how to use the tools.
    d. The safety rules will be remembered best if they are discussed as the child is performing the activity for which they are intended.

B. What to Expect from the Child

1. Developing the skills to use tools takes a great deal of practice.

    a. The child begins to put things together only after these skills are developed.
    b. The process of exploration and experimentation is much more important than any final product.

2. At first the child has no particular plan.

    Example: She may put nail after nail into a piece of wood, randomly attaching materials in a variety of ways.

3. Eventually, this experimentation leads to discovery.

    Example: The child nails two pieces of wood together and discovers that she has made an airplane. She may nail a bottle cap to the wood so that it spins.

C. When to Teach

1. Sometimes, that which appears a problem to us, is not a problem to the child; for example, the wood splitting while the child is hammering nails.

    a. It is often best to step back at these times and allow the child to discover what she can do through trial and error.
    b. Use the child's facial expressions as a cue for when to step in.

2. It is important to step in if safety is an issue or if the child becomes frustrated because she cannot carry out her goal.

3. Encourage the child to see you as a resource person.

    a. Offer guidance but do not complete the task for her.
    b. You might point out alternative methods of doing something, giving the child the choice of accepting or rejecting your suggestions.
    c. If the child cannot complete a task, explain that she is not ready for that particular task and provide some alternatives.

4. As the child's skill develops, she may begin to set goals for what she wants to make without being able to visualize the finished product.

    a. This is a frequent cause of frustration.
    b. Talking about what the child wants to make and asking questions is one way of offering guidance and support.
        1) Look at pictures of what the child wants to make and name the parts.
        2) Help the child look for the right piece with which to start.
        3) Ask:
            a) "What else does it need?"
            b) "Do you want it to have another part?"
            c) "Can you find a bigger piece of wood?"
            d) "How can you make it sturdier?"
    c. Often a child will begin with one plan in mind and move on to another. It is important to allow the child freedom to do this.

5. Close observation of the child and her skill with tools and materials will help you determine when to step in

and, also, the kinds of materials to make available at any given time.

Example: If a lot of hammering is going on you may want to extend the activity by putting out rubber bands and pipe cleaners for wrapping around the nails.

D. Setting Up the Woodworking Area

1. Environment

a. The woodworking area should be as free from interruptions as possible. It should be:
   1) Located in a place where noise is acceptable.
   2) Roomy--allow at least an arm's length of space between children.

b. When space is limited, you may choose to have the area open only at certain times of the day or on certain days of the week.

c. Try to set up the woodworking area as close to the art area as possible so that art materials can easily be incorporated into the children's carpentry.

2. Tool storage

a. Tools should be stored so the children can get them and put them away easily.

b. Tools should be hung up rather than thrown into a box or a drawer.
   1) Pegboard can be used with the outline of each tool drawn on it.
      a) Labeling each tool provides a reading activity.
      b) You can tell at a glance if anything is missing.
   2) An alternative is a piece of plywood with permanent hooks attached.
   3) There are also commercially made cabinets available that fold and allow the tools to be kept out of sight when not in use.
      a) This is particularly useful if the area will not always be used for woodworking.
      b) A cabinet can be made by nailing pegboard or thin plywood to a frame with hinges.

3. Material storage

   a. The way materials are stored will make a big difference in how they are used.
   b. Each kind of hardware should have its own container for easy identification.
      1) Glue a sample of the item on the outside of the container.
      2) Use cans, boxes, plastic containers or the small plastic drawers sold in hardware stores.
   c. Wood can be sorted according to size.
      1) Hardwood pieces for glueing should be kept separate.
      2) Big pieces should go on a shelf and should never be left to lean against a table or a wall.

4. Workbench

   a. Workbenches can be purchased from such manufacturers as Childcraft and Community Playthings.
   b. If you build your own workbench, be sure that the surface is firm and steady.
      1) The appropriate size is 20" to 24" high with a 2" thick top.
         a) It should be low enough to allow good leverage and use of body weight in applying pressure to tools.
         b) It should be long enough to provide plenty of elbow room and wide enough so that children can work on both sides.
      2) Use wood-holding devices such as a vise with a 4" to 6" jaw or C-clamps with the same size opening
   c. Alternatives include:
      1) An old, sturdy table cut to appropriate proportions.
      2) 2" thick, heavy planks secured across saw horses or sturdy crates.
      3) An old door attached to sturdy legs.
      4) A large piece of wood (at least 2' x 2') with a piece of carpeting nailed to it to muffle noise.
         a) This can be used inside on the floor or outside on the ground.
         b) Activities will be limited when working on this kind of surface.
      5) A tree stump for hammering practice.
   d. The sturdiness of your workbench will determine the range of woodworking activities children can sample.

5. Plan to have at least one other "special" activity for children to choose besides woodworking. This will make it easier for children to wait their turn.

RESOURCES

Woodworking Tools and Materials

Workbench

Preferred Specifications

1. 20" to 24" high to allow greatest leverage and use of body weight for applying pressure to tools.
2. 2"-thick top
3. Big enough to provide plenty of elbow room.

Commercial Models

1. Childcraft: 42" x 22" with 1-3/4" edge equipped with a vise--$124.95.
2. Community Playthings: 44" x 20" with 1-1/4" edge equipped with a vise--$84.50.

Alternatives

1. Old sturdy table cut for the height of the children using it.
2. Heavy (2") planks secured across saw horses or heavy crates.
3. Old door carefully attached to sturdy legs.
4. Tree stump, log or railroad tie for pounding nails.

Tool Storage

1. Pegboard with the outline of each tool drawn on it and with each tool labelled.
2. Plywood with permanent hooks.
3. Portable tool cabinet:
    1. Childcraft: 24-1/2" high x 41" wide x 3" deep--$27.95.
    2. Community Playthings: 24" high x 40" wide--$25.50 ($79.50 with tools).
    3. Homemade: Nail pegboard or thin plywood to the back of a hinged frame.

Materials

1. Hardware can be stored in boxes, cans or plastic containers with the correct size nail, screw, etc., glued to the outside for easy sorting.

2. For wood try:
    1. A shelf or rack for large pieces
    2. A bin or box for small pieces
    3. A drum for long pieces or doweling

Basic Tools

A. **Carpenter's Vise**

Bolted or screwed onto workbench
3-1/2" to 4" jaw
Vise or C-clamp is needed whenever children saw or drill

B. **C-Clamp**

Portable
4" - 6"

C. **Hammer**

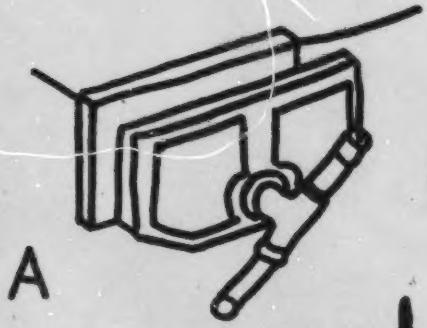
Bent claw
Drop-forged head is safest
10 to 13 ounces generally recommended
Need one for every child using workbench at a given time

D. **Saw**

Cross-cut is generally preferred
8-10 pt. (8-10 teeth/inch), 10 pt. gives finer cut than 8 pt.
There are different opinions about best length; 16" is probably best, some sources recommend 12" or 20"
You may not want to use this with younger children
Wood to be sawed must be held in C-clamp or vise

E. **Drills**

1. **Brace and Bit**
   Use ratchet type
   For use on wood only
   Comes with different size bits. Bits come in 1/16" sizes ranging from 3/16" to 1". #5 size = 5/16", #8 = 8/16".
   Wood to be drilled should be held in C-clamp or vise
   Caution: Drill bits can become hot from drilling



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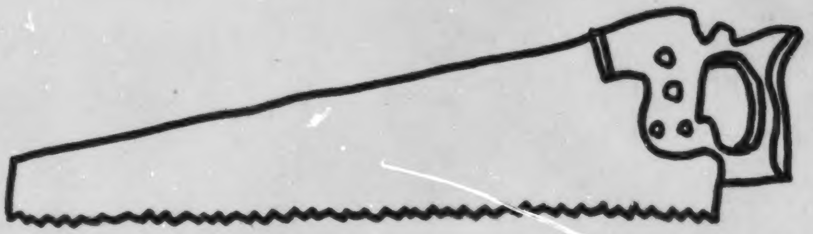

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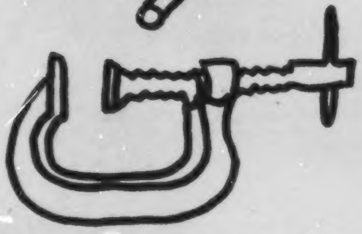

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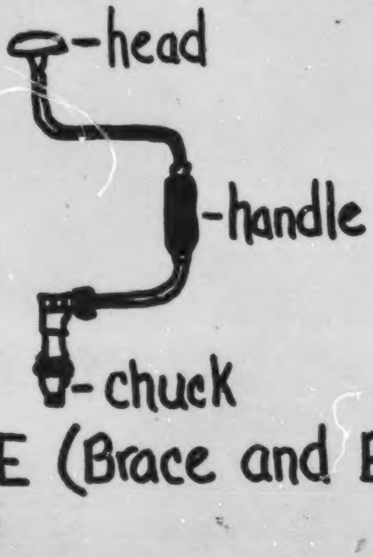

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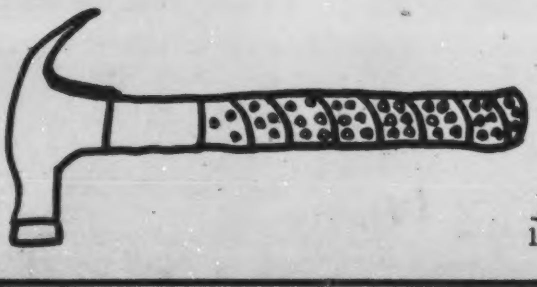

C

2. Hand Drill
   - Used for smaller holes since bits only go to 1/4", 3/8", or 1/2" depending on drills
   - Sometimes considered harder for children to use than a brace and bit
   - Works like an eggbeater
   - Wood to be drilled should be held in C-clamp or vise

F. Screwdrivers

- Need assorted sizes to match screws
- 4" to 6" long with 1/4" blade or larger is generally recommended
- Slotted head is easier to use than phillips head screwdriver

G. Sandpaper

- Assorted grades from fine to coarse

H. Wood Rasp
- 1/4" to 1" wide, 8" to 10" long recommended
- Similar use as plane which is not recommended for preschoolers

I. Surform Plane
- This is a safer alternative to a plane because of its corrugated blade

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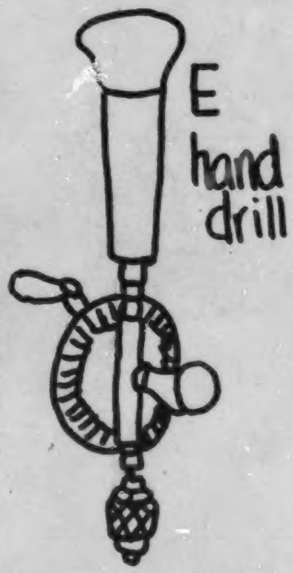
(Not pictured)

J. Pliers 5 1/2" to 7-1/2" long
K. Rulers and/or tape measure
L. Paint brushes
M. Fat pencils
N. Magnets for picking up nails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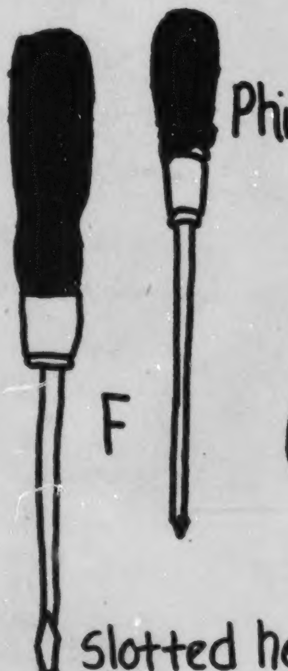
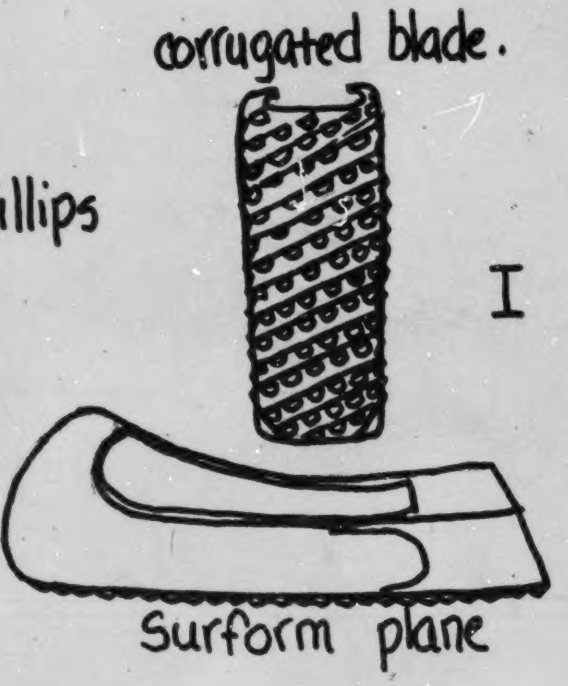
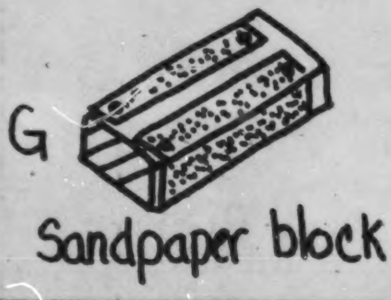
hand drill


Phillips
F
Slotted head


corrugated blade.
I
Surform plane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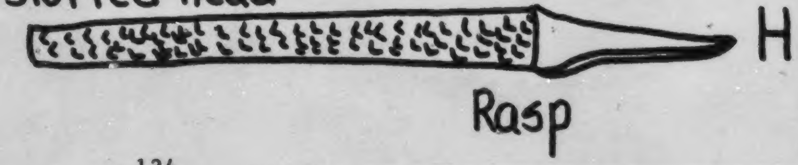
Sandpaper block



Materials

A. Wood

Soft woods (white pine, basswood, spruce, poplar, fir, cedar) are best. Plywood is hard to nail or cut.

Best if grain runs lengthwise.

B. Other basic materials (particularly for beginners)

Styrofoam, tree trunks, thick corrugated cardboard, wallboard, ceiling tiles.

C. Wooden Dowels

D. Nails

Types
Common nails
Box nails (large heads)
Roofing nails (large heads, but rough and hard to pound)
Finishing nails (small heads)

Buying Hints
Cheapest to buy by the pound
Order by penny weights (d's) (2d = 1", 4d = 1-1/2", 6d = 2", 8d = 2-1/2").

E. Screws

F. White glue (such as Elmer's)

G. Finishes for Wood

Powdered tempera paint mixed in milk
Powdered tempera paint mixed with wheat paste
Water based acrylic paint
Crayons
Poster paint

H. Miscellaneous

Things to wind around nails or wood pieces:

Yarn
String
Rubber bands
Wire

Twist-ties
Thread
Pipe cleaners
Straws

(Miscellaneous cont'd.)

Things to nail or paste onto wood:

- Fabric scraps
- Thin pieces of styrofoam (e.g., meat containers, styrofoam scraps)
- Tongue depressors
- Popsicle sticks
- Cut up plastic straws
- Pieces of milk cartons
- Bottle tops (teacher can initially hammer holes)
- Soft plastic tops
- Buttons
- Spools (can be hammered in, but you need to put a washer right under the nail head)
- Cork
- Pegboard
- Masonite
- Formica
- Carpet scraps
- Film cans
- Ribbon
- Aluminum foil
- Feathers
- Leaves
- Paper towel tubes
- Beads
- Macaroni

Things to bang into styrofoam:

- Golf tees
- Toothpicks

Sawdust Modelling Recipes

Beat 1 cup dry wheat paste into 2 cups water.
Add 4 cups sawdust, mix and knead.

OR

Mix 2 cups sawdust with 1 cup plaster of paris and 1/2 cup dry wheat paste.
Add 2 cups water, mix and knead.

Safety Rules for the Woodworking Area

1. Tools are to be used for their intended purpose only and are not to be taken from the bench area.
2. When carrying tools, walk with the sharp edge down and away from the body.
3. Make sure the tool is pointed in the right direction before using it (e.g., saw teeth down).
4. No arguments with tools in hand.
5. Keep the work area free from clutter.
6. Boards must be held by a vise or a clamp or nailed to a bench when sawing or drilling. Another child never holds a board for someone else.
7. Check vise and C-clamps to make sure they are tight.
8. Watch out for splinters.
9. Tools must always be replaced in the tool box or hung on the appropriate hook.
10. Only a recommended number of children are to be in the workbench area (depending on size of bench and area).

Books for Children*

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Burton, V.L. Katy and the Big Snow. Boston: Houghton and Mifflin, 1971.

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Gergely, T. Busy Day, Busy People. New York: Random House, 1973.

Miriam, E. Bam, Zam, Boom, photo design by W. Lightfoot. New York: Walker & Co., 1972.

Mother Goose Library. London Bridge is Falling Down!, illustrated by P. Spier. Doubleday, 1972.

Rockwell, A. and Rockwell, H. The Toolbox. New York: Collier Books, 1971.

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*Examine these books carefully for evidence of sexism. Try to balance books about boys and men doing carpentry with stories, discussions, and pictures of female characters engaging in the same activities.

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Pitcher, E.G.; Lasher, M.G.; Feinburg, S.G.; and Braun, L.A. Helping Young Children Learn. (2nd ed.). Columbus, Ohio: Charles E. Merrill Publishing, 1974.

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Follow-Up Ideas for Trainers

Have a Perceptual-Motor Development Workshop

Research a list of resources for free or inexpensive tools and materials and encourage centers to start a resource center for free materials.

Give individual consultation on setting up a woodworking area.

Observe the center's woodworking area and offer suggestions.

Act as a model for effective leadership of woodworking activities.

Make suggestions for specific field trips related to woodworking (e.g., lumber yard, cabinet maker, construction site).

APPENDIX

Learning Involved in Woodworking*

Social-Emotional

- Sharing
- Aggression release
- Frustration tolerance
- Cooperation
- Sympathy
- Taking turns
- Patience
- Success!
- Fighting sexism
- "Real world"--feel big

Sensory Development

- Tactile experience of modeling
- Pain
- Smells
- Feeling differences between sanding and planing
- Rhythm
- Noise differences
- Feeling different materials
- Using eyes

Problem Solving

- Where to drill so hole is in the right place
- Taking turns and sharing
- Picking out right tool for the job
- Finding the right nail
- Judging sizes

Gross Motor

- Movement for hammers and saws
- Building strength
- Coordination

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*Developed by participants of a woodworking workshop held on 3/8/79.

Fine Motor/Perceptual-Motor

Hitting nail--not finger
Molding
Manipulations
Learning to use screwdrivers
Learning to use pliers
Figure-ground
Spatial relationships

Math

How many?
  nails
  pieces of wood
Measuring
Geometric shapes
Sizes
Part/whole--fractions
Words--concepts
  long/short
  big/small

Science

Hard vs. soft woods
Lever
Fitting screws into wood
Inclined plane
Exploring materials
Raw materials → finished products
Invention
Sorting
Matching
Seriation
Cause and effect
Change

Language Development

Labelling tools
New words
Conversations
Stimulates talking to parents
Lead-in to socio-dramatic play

Social Studies and other Extensions--Field Trips

Lumber yard
Hardware
Woods
Guests (carpenter, etc.) coming to the center
Watch workpeople in centers
Furniture stores
Help with "real" work in center

Before Numerals and Test Tubes
Preschool Math and Science

Ellen Kotlus
Carol Carter Alexander
Tobi Hanna Bartlett
Dorothy Simpson

PREPARING THE WORKSHOP ON MATH AND SCIENCE

Workshop Objectives

1. To convey the interrelation between preschool math and science by:
    a. Discussing the importance of concrete experiences in both areas.
    b. Defining basic concepts (e.g., classification, seriation, spatial relations, measurement, cause and effect) and providing examples of activities which contribute to the development of each.
    c. Discussing the adult's role in encouraging questioning and divergent thinking in preschool children.

2. To display materials and to discuss a variety of activities for preschool children in the areas of math and science.

3. To display books both for adult use and for use with preschool children.

4. To provide instructions for making inexpensive preschool math and science materials.

5. To provide an opportunity for caregivers to focus upon a specific theme (e.g., animals, cooking), and plan related activities that will encourage the development of math and science concepts.

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Materials for the Workshop

Hand-Made Materials

- Hooks and washers*
- Printing set*
- Sound shakers*
- Scent bottles*
- Concept puzzles*
- Geoboard*
- Ocean in a bottle*
- Bread mold*
- Sprouts*
- Plants in a variety of containers
- Chart, illustrating growth of a lima bean over time
- Chart with steps of a problem-solving process written out
- Seriation cylinders*
- Texture board*
- Sorting cards*
- Clothespin game*
- Screw board*
- Box of objects*
- Floating egg*
- Water dish garden*
- Rubber egg*
- Birthday graph
- Chart containing additional suggestions for making graphs

Commercial Materials

- Super Magnet (Creative Playthings)
- Matchmates-Objects (Creative Play-things)
- Books from the bibliography
- Newsprint
- Masking tape
- Felt tip pens

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*Instructions for making these materials are provided in the handout, "Math and Science Materials to Make."

Suggested Workshop Format

Method of Delivery

We combined preschool math and science in one workshop in order to focus upon concepts and processes that are common to both. We did not include work on the concept of number in this workshop to encourage caregivers to broaden their definition of what math can mean in a preschool setting.

A formal presentation was used for the following topics: basic Piagetian concepts, the scientific inquiry or problem-solving process and specific ideas for scientific experiences. This method of presentation was balanced by having materials necessary for the suggested activities available for participants to examine. We were thus able to provide concrete ideas for activities and to place them within a developmental framework.

Participants were asked to brainstorm for another part of the workshop, one based on the theme of animals. In this activity caregivers were able to share ideas they had tried and to gain new ideas for their programs.

A separate module included in this book, "Cooking" includes further ideas for math and science exploration with preschoolers.

Time Table (90 minute workshop)

Time	Topic	Method of Presentation
5 minutes	Introduction	Formal Presentation
20 minutes	Basic Concepts of Math and Science A. Classification B. Comparison and Seriation C. Spatial Relations D. Temporal Relations	↓
15 minutes	The Scientific Inquiry or Problem-Solving Approach A. Identifying the Problem B. Formulating Hypotheses C. Testing Hypotheses and Drawing Conclusions D. Recording Results E. Evaluating the Process F. Using the Scientific Inquiry or a Problem-Solving Approach	↓

Time	Topic	Method of Presentation
15 minutes	Planned Science and Math Activities	Formal Presentation
15 minutes	Brainstorming Activites around the Theme of Animals	Brainstorming
10 minutes	Questions	Group Discussion
10 minutes	Opportunity to View Displays	Informal Browsing

THE WORKSHOP PRESENTATION: MATH AND SCIENCE

I. Introduction

"What comes before numerals and test tubes?" This question summarizes the focus of this workshop: important underlying processes that contribute to later scientific and mathematical thoughts. In this workshop we will not focus on numbers. Instead, we will focus on the development of concepts such as classification and seriation that are the foundation for an understanding of numbers.

The essence of science and math is relationships. Before a child can understand relationships between abstract symbols and ideas, she must understand objects in her environment and be aware of the effects of her actions on those objects. Children are naturally curious. They will discover a great deal about their world if they are given the opportunity to directly explore, manipulate and problem-solve in a variety of situations.

A young child will not learn about the qualities of sand from a verbal description given by an adult. She learns about sand when she is free to play in and with it; when she discovers how it feels and tastes, when she experiments by pouring sand into and through containers and when she builds with it and finds out how its qualities change when water is added. It is from experiences such as these, over a long period of time, that the child begins to understand the meaning of concepts such as shape, color, weight, quantity and time.

It is not necessarily the goal of preschool math and science to develop future mathematicians and scientists. It is important to enable children to develop a sound approach to problem-solving, one that can be applied in many life situations. This is our goal in presenting these materials to you.

II. Basic Concepts of Math and Science

A. Classification

1. Definition

Observing characteristics of things, sorting according to these characteristics and labelling the characteristics.

2. Encouraging Concept Development

   a. There are several components of this skill, all of which can be practiced during regular preschool activities.
      1) Observing characteristics of things: Provide a variety of materials for the children to explore such as:
         a) Art Media
         b) Cooking materials
         c) Manipulative toys
         d) Living and non-living things from outdoors (e.g., stones, leaves, insects)
      2) Sorting objects according to observed characteristics: As children mature in this skill they are able to use categories which are progressively more abstract and complex.
         a) Things that get their meaning from each other: needle and thread, knife and fork.
         b) Things that go together because they have similar uses: wooden blocks, Legos and Bristle blocks.
         c) Descriptive groupings: Sorting objects according to attributes such as size, shape, texture or color.
         d) Conceptual groupings: Sorting objects according to the general category to which they belong: apples, pears and bananas are all within the category of fruit.
         e) Using several different attributes to describe an object is an extension of all of the above.
   b. It is important to ask the child why she sorts things in a particular way. Her criteria may make more sense than you originally thought.
   c. Extend classification activities by asking the child to group the objects "another way." You can then observe how the child is thinking and plan activities that are at an appropriate developmental level.
   d. Activities which promote Classification Skills: Instructions for making and using these materials are given in the section of this module entitled, "Math and Science Materials You Can Make."
      1) Clothespin Game
      2) Concept Puzzles
      3) Scent Bottles
      4) Box of Objects
      5) Sorting Cards
      6) Hooks and Washers
      7) Screw Board

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B. Comparison and Seriation

1. Definitions:
    - a. Comparison: Describing the relationship between two objects according to a specific characteristic (e.g., texture, size).
    - b. Seriation: Arranging things in order, according to a specific property such as weight, length or sweetness.
2. Encouraging Concept Development
    - a. As in classification, in order to compare children need to explore, perceive and describe individual characteristics of objects.
    - b. Measurement is a form of comparison, and while standard units of measurement are not meaningful to a preschooler, children frequently compare by length, height and size.
        - 1) Comparing things in relation to themselves is most common and materials such as string, unit blocks or hands can also be used for informal measuring.
        - 2) Other opportunities for comparison arise in the block area, when tasting ingredients for a recipe, and on a neighborhood walk as children feel textures of a variety of objects.
        - 3) Children can also use their senses to make guesses or estimations of measurement. For example, they might guess which of two objects feels heavier and then test it out on a balance scale.
    - c. Vocabulary can be expanded while children are involved in comparison activities.
        - 1) Use comparative words such as bumpier, smoother, stickier, and ouchier.
        - 2) Make comments such as:
            - a) "What a high tower you have made."
            - b) "The clay is hard today."
    - d. The ability to seriate is based upon the ability to compare. This skill develops only after the child has had many opportunities to become aware of differences between objects.
    - e. Children can be encouraged to make comparisons or to seriate:
        - 1) Provide materials that are of different sizes, weights and textures.
        - 2) Rather than planning a small group activity where the task is to compare or seriate per se, have the children choose a large, medium or small piece of paper to use during an art activity.

3. Activities Which Promote Comparison and Seriation Skills

   Instructions for these activities are found in the section, "Math and Science Materials You Can Make."

   a. Texture board
   b. Seriation cards
   c. Sound shakers
   d. Seriation cylinders
   e. Graphs

C. Spatial Relations

1. Definition:

   The knowledge of the relationship of objects to each other (e.g., under, next to, between, over).

2. Encouraging Concept Development

   Several types of activities contribute to an understanding of spatial relationships.

   a. Movement activities like those described in the module on Gross Motor Development can be used. Before a child can discern the relationship between objects, she must gain an awareness of her own body and its relationship to the environment.
   b. Exploring materials such as puzzles, Legos, an old typewriter and jars with lids will help children discover how things fit together and are taken apart.
   c. Rearranging objects (e.g., stacking blocks, furniture) and transforming objects (e.g., folding a piece of paper) will help children see that objects can be rearranged in space and still retain their basic properties.
      1) This understanding is important for later development of conservation.
      2) As children play, describe for them what they are doing:
         a) "You've changed the blocks around. Last time I looked, they were stacked up high."
         b) "Myra, before you were covered by the blanket. Now I see that you have folded it up."
   d. Observing and describing objects from a variety of spatial viewpoints also helps children learn spatial relations.
      1) When a child is up high on a jungle gym, ask her to describe what she sees.
      2) Take photographs of objects from different angles and leave them out for the children to look at.

e. Group games such as "Simon Says," "Follow the Leader" and going through an obstacle course will provide an opportunity for adults and children to describe spatial relationships (e.g., under, next to, toward, close to).

D. Temporal Relations

1. Definition:

   The understanding that time exists along a continuum--past, present, future.

2. Encouraging Concept Development

   a. This is a difficult concept, the understanding of which is necessary for science and mathematical operations.
   b. The culmination of much of this learning can be seen in the understanding of cause and effect, or "if/then" statements:
      1) "If we put the water in the freezer, then it will become hard."
      2) In order to understand this concept, the child must be able to maintain continuity of time in her mind.
   c. The understanding of temporal relations increases as the child is able to:
      1) Describe past events through movement, words or pictures.
      2) Anticipate future events.
      3) Observe conventions for marking time, using terms such as afternoon, snack-time, week-end or tomorrow.
      4) Describe the order of events. In doing this, the child becomes familiar with words such as earlier, now, again, before and while.
   d. An understanding of these concepts arises largely through conversations about everyday events.

III. The Scientific Inquiry or Problem-Solving Approach

This is the thought process scientists use to come up with ideas that were not thought possible twenty years ago; it is also the way young children think naturally. It is important that we realize how valuable this process, and the curiosity that motivates it, is, and avoid squelching these qualities as children investigate. Scientific inquiry proceeds in six stages, each of which can be incorporated into the preschool program.

A. Identifying the Problem

1. Definition

   a. Stating exactly what you are trying to figure out.
   b. Examples:
      1) A child at the easel says, "This paint is too drippy."
      2) A child in the sandbox says, "I don't want my tunnel to keep falling in."
      3) A child in the dramatic play area says, "I want to be a police officer. What can I put on?"

2. Encouraging Problem-Solving Skills

   a. All of these children have identified problems. It may be tempting to "jump in" and help solve the problems for them, taking away the opportunity for the children to problem-solve on their own. For example:
      1) "Stir up the paint; the thick part is on the bottom."
      2) "Dig over here where the sand is wetter."
      3) "I'll get you the police hat from the closet."
   b. However, alternate responses may encourage children to work out solutions for themselves. For example:
      1) "Hmm, it is drippy. What do you think you could do about it?"
      2) "It does keep falling in. What do you think you can do?"
      3) "What do you think a police officer should wear?"
   c. The children in these examples all defined their problems verbally. Sometimes children need assistance in taking this step. They can be encouraged with questions such as:
      1) "What are you trying to do?"
      2) "How do you want it to look?"
   d. Rather than end the problem-solving process, open-ended questions encourage children to continue to participate in the process of discovery.

B. Formulating Hypotheses

1. Definition

   a. Coming up with possible solutions and making predictions.
   b. Example: The child with drippy paint at the easel might hypothesize:
      1) "If I don't put my brush all the way in the paint, maybe it won't drip so much."
      2) "Maybe it'll be better if I put more paint powder in."
      3) "Maybe sand will make it thicker."

2. Encouraging Problem-Solving Skills

- a. At this point, too, it may be tempting to provide answers:
    - 1) "No, you can't put sand in the paint."
    - 2) "Yes, powdered paint will work."
- b. There may be times when it is appropriate to disallow a child's plan if a potential danger is involved. If there is no danger, perhaps caregivers can appreciate that children are testing hypotheses and view sandy paint as appropriate in some situations.
- c. Sometimes, children do not formulate hypotheses because they are used to getting answers from adults. In these instances, questions such as, "What do you think you could do about it?" may help children think of alternative solutions on their own.
- d. In order to help the child who already has formulated a hypothesis (e.g., the child with drippy paint) proceed to the next step, you might ask:
    - 1) "What do you think will happen if you try that?"
    - 2) "What else could you try?"

C. Testing Hypotheses and Drawing Conclusions

1. Definition

Trying out ideas to find out if the answer guessed really works.

2. Encouraging Problem-Solving Skills

- a. Many children proceed to this step independently.
    - 1) The child with drippy paint will test her idea by:
        - a) Dipping just the tip of the brush into the paint.
        - b) Putting in some powdered paint.
        - c) Putting in some sand.
    - 2) The child may then draw her own conclusions from the results. These may include:
        - a) "It's still drippy, even with just a little paint on the brush."
        - b) "Hey, paint powder makes the paint goopier. It works!"
        - c) "The sand made my paint bumpy."
- b. Some children will need encouragement in order to test their hypotheses. Ask questions such as:
    - 1) "How can we find out?"
    - 2) "What have you tried?"
    - 3) "What else could you try?"

- c. The child may repeat this step again and again.
  - 1) If a child tests one hypothesis and it does not work, then she may formulate a new one.
  - 2) The child who was not pleased with the results of adding sand to the paint may try adding Play Doh or soap powder the next time.

D. Recording Results

1. Definition

Summarizing events in a form which may be communicated to another.

2. Encouraging Problem-Solving Skills

- a. Information can be recorded in the form of graphs or dictated stories.
- b. Creative movement activities will enable the children to depict changes they have observed.
- c. The children can be encouraged to express verbally that which they have tried and discovered firsthand with questions such as:
  - 1) "How did you do that?"
  - 2) "What happened?"

E. Making Generalizations

1. Definition

Applying conclusions to other situations.

2. Encouraging Problem-Solving Skills

For children who need help in making generalizations, ask questions such as:

- a. "Do you think that it will work this way if you do it again?"
- b. "Did you expect that to happen? Why do you think it did?"

F. Evaluating the Process

1. Definition

Thinking back over all of the steps in the process and deciding if there may be a better way to approach the problem.

2. Encouraging Problem-Solving Skills

Children can be helped to evaluate what they have done with questions like:

a. "How did you do that?"
b. "Next time you build a tunnel, do you think you will do it this way? Why not?"
c. "Next time your paint is too drippy, which way do you think you will try to fix it up?"

G. Using the Scientific Inquiry or Problem-Solving Approach

1. This approach can be used anywhere. As these examples show, scientific inquiry need not occur solely in science or math activities. The situations (e.g., painting, sand play, dressing up) may occur at any time during the day, and creative scientific thinking should be encouraged as opportunities arise.

2. The scientific inquiry process is an important way for young children to learn about many things.

IV. Planned Science and Math Activities

In addition to utilizing spontaneous opportunities for scientific inquiry, it is also important to provide special math and science materials so that children are assured of having a variety of interesting things to investigate and hypothesize about. For example:

A. Displays

1. Displays can be set up periodically by the caregiver for the children to observe. Suggestions for displays, like Ocean in a Bottle, Waxed Dish Garden, and Bread Mold, are included in the section of this module entitled, "Displays for Science Exploration." (Caution: many children are allergic to bread mold.)

2. Displays can be used as a starting point for discussion. Ask open-ended questions to encourage the children's curiosity.

a. "What do you think made the water blue?"
b. "What else can we plant in a dish garden?"
c. "Why do you think the bread turned moldy?"

3. Materials such as magnets or a collection of rocks can also be set out for children to manipulate and make discoveries about. Materials appropriate for this kind of exploration are listed in, "Suggested Materials for Preschool Science Exploration."

B. Ongoing Science Activities

1. Careful planning will enable you to incorporate the basic math and science concepts described earlier into activities which allow the children to discover relationships for themselves.

2. Many of these activities can be discussed and planned with the children.

3. Suggested On-going Science Activities

    a. Planting Seeds
        1) Before Planting:
            a) Visit a garden or greenhouse so the children can observe how different plants grow.
            b) Have the children explore a variety of vegetables. Encourage them to describe different vegetables' characteristics (e.g., color, shape, texture, taste) and compare the vegetables to each other.
            c) Discuss the supplies necessary for planting seeds
            d) Go to the store and allow the children to purchase seeds and supplies on their own.
            e) Have the children match and sort some of the seeds according to their own criteria.
        2) Planting Activities
            a) Discuss how the seeds will be planted. Allow children to try different kinds of containers.
            b) Label each plant and have each child take care of her own plant.
            c) Use masking tape to "measure" the height of the plant over time. Place the piece of tape onto a chart so there is a permanent record of the plant's growth.
            d) Take pictures of the plants and attach these to a story made up by the children.
            e) Discuss changes that are taking place over time.
    b. "Adopt" a tree near the center that can be observed by the children during each season.
        1) Take pictures periodically so there will be a record of the changes that take place.

2) Write a story with the children that describes their observations of the tree as the year progresses (e.g., leaves changing color, leaves falling, new buds on the twigs).

3) Collect items found around the tree at different times of the year. In all science activities it is important to emphasize processes such as observation, classification and communication and to de-emphasize the rote learning of facts.

MATH AND SCIENCE IN THE PRESCHOOL

Using Pre-Number Skills During Block Play, Nature Walks and Clean-Up

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Classification

Observing characteristics of things, sorting them according to their characteristics and labelling the characteristics.

Block Play

When using blocks children learn about such properties as size, shape, thickness and length.

Children become aware of similarities and differences as they search for an appropriate block.

Suggestions

With a magic marker, draw the shape of each block on the storage shelf.

Have a container for each type of accessory to encourage sorting.

Nature Walk

Suggestions

Encourage the children to use their senses:
Feel (sticky, smooth, prickly)
Smell (smoky, sweet)
Hear (high, soft, rustly, crunchy)
See (dusty, droopy, cloudy, foggy)

Collect things, bring them back to the center and allow the children to sort them in a variety of ways.

Provide a pan of water so that children can discover which items sink and which ones float.

Clean-up Time

Suggestions

Draw the shape and/or paste a picture of the material to be stored in the storage area.

When cleaning up in the housekeeping area encourage children to store props according to their use (e.g., eating, dressing up, cleaning).

Comparing

Describing the relationship between two objects according to a specific characteristic (e.g., texture, size).

Seriation

Arranging things in order, according to a specific property (e.g., weight, length, sweetness).

Block Play

Suggestions

Children like to compare the height of block structures in relation to themselves.

A structure is made longer by adding a block to it.

Blocks can be returned to the shelf with the "longest" put away first, etc.

Provide props such as nesting boxes, a Montessori pink tower, etc., for the children to use.

Use terms such as, "longer than," "shorter than," "higher," "lower," "biggest," "middle-sized," "smallest".

Provide props (e.g., people, animals) of at least three different sizes.

Nature Walk

Suggestions

Encourage the children to compare collected items in relation to color, roughness, size, shape, etc.

With a collection of rocks, for example, ask questions like:
"Which one is the biggest?"
"Can you find one that is smoother than this one?"

Clean-up Time

Suggestions

Ask: "Which clean-up job do you like the best?"
"Which do you like least?"

Say: "Let's put away the biggest nails first."
"Let's put away the middle-sized nails next."

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Spatial Relations

The knowledge of the relationship of objects to each other.

Block Play

Blocks can fit together in a variety of ways.

Blocks may be placed flat, on edge or on end.

A block building is composed of parts that are in balance with each other.

As the child climbs in and out of the block structure, she experiences it from different angles.

Children build their structures within a specific area of the room.

With experience, children will learn not to build their structures too close to the shelves or to another child's building.

Suggestions

Take a picture of the child's structure from more than one spatial viewpoint.

Blocks are placed "next to each other," "on top of," "under," "apart from," etc. Use these words when describing what the child is doing.

Ask questions such as: "Can you make your line of blocks go all the way to the shelf?"

Nature Walk

Suggestions

Have the children look for things that are up high, low on the ground, under rocks, inside nests, etc.

Let a child ride on your shoulders; ask her what things look like from up so high.

Ask the children to choose a patch of ground and explore everything that is found within it.

Clean-up Time

Suggestions

Have the children help to rearrange the furniture after an activity.

Say: "Put the scissors next to the crayons."
"Put the chairs on top of the table."

Temporal Relations

The understanding that time exists along a continuum--past, present and future.

Block Play

Children discover cause and effect relationships such as: "If you build your tower too high, it will fall down."

Suggestions

Take pictures of children's block structures, thus providing a record of something they did in the past.

Encourage the children to talk about what they plan to build.

Nature Walk

Suggestions

Children can bring things inside and observe changes over the course of time (e.g., leaves, ice).

After a walk, ask the children: "What did we do first?" "What happened next?"

Plan a walk with the children the day before it is to take place.

Write down children's stories about the walk.

Clean-up Time

By participating in "clean-up time" on a regular basis, children learn a convention for marking time.

During an activity, help children to anticipate when clean-up time will be.

Math and Science Materials You Can Make*

Box of Objects

Concepts and Skills Developed

Figure-ground relationships
Visual discrimination
Classification

Materials Needed

Shoe box
Assortment of small objects from the 5¢ and 10¢ store (e.g., little farm aminals, colored balloons, miniature cooking utensils, toy cars)

Approximate cost: $2.00 - $3.00

Instructions

Ask the child to find all of the things that go together and have her tell you about the categories chosen. (Note: Often the child will not "hold on" to the attribute she begins with. For example, she might put a blue block, a blue balloon and a blue airplane together (color) and then add a yellow airplane (type of object).)

Suggest categories for sorting (e.g., put all of the animals together).

Variations

Start with just a few objects in the box and ask the child to pick out a specific one from the group. As the child's skill increases the task can be made more challenging by adding more objects to the box.

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*We went to lumber yards, hardware stores, our basements, storage rooms and rummage sales to get many of the items used for making the following manipulative materials. We found that some places were willing to donate wood and hardware.

The Clothespin Game

Concepts and Skills Developed

Small muscle development
Eye-hand coordination
Size, shape and color discrimination
One-to-one correspondence
Observation of details

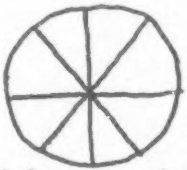
Materials Needed

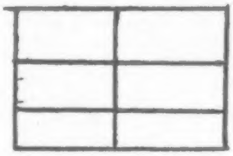
Stiff cardboard circle, square or rectangle approximately 12" x 12"
6 spring clothespins
Colored marking pens or poster paints
Shirt cardboard or plain white index cards to cut up
Scissors
Ruler
Glue or tape

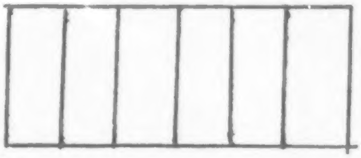
Approximate cost: negligible

Instructions for Construction

1. Measure and mark off a large piece of cardboard into 6 equal sections. Each section must border on the outside edge of the cardboard.







2. Color or paint each section with a different color.
3. Cut the index cards into squares approximately 2½" x 2½".
4. Color one small square to match each section of the large piece of cardboard.
5. Tape or glue one small colored square to each clothespin, leaving the end of the clothespin visible, for the child to squeeze.

Instructions for Use

The child has two tasks--matching the colors on the clothespins to those on the large cardboard, and manipulating the clothespins to clip them onto the cardboard in the appropriate place.

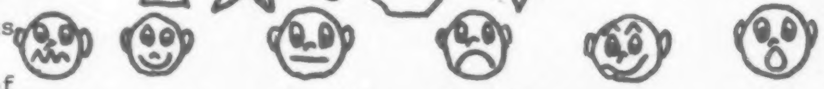
The Clothespin Game (cont'd.)

Variations

1. Make 8, 10, or 12 colored sections with matching clothespins for a more difficult version.
2. Instead of using colors, make a matching game with any of the following:

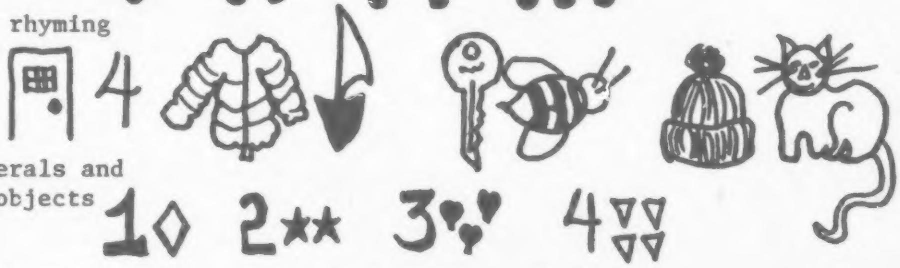
Shapes

Facial expressions



Sets of objects of different amounts

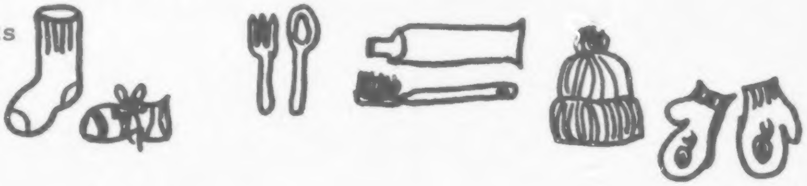
Pictures of rhyming words



Written numerals and numbers of objects in groups 1 ◇ 2 ★★ 3 ♥♥♥ 4 ▽▽▽▽

Magazine pictures (either identical pictures or similar related ones)

Pictures of objects which go together



Any other kinds of matching you can think of!

Concept Puzzles

Concepts and Skills Developed

Ability to take apart and put things together
Eye-hand coordination
Depending on the puzzles you make:
Matching (e.g., size, shape, color, etc.)
Ordering (e.g., size, amount, etc.)
Number

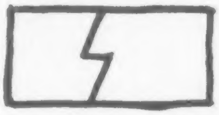
Materials Needed

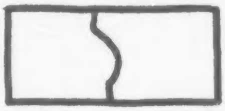
- Poster board
- Elmer's glue
- Fabric scraps
- Sandpaper
- Pasta
- Rice
- Small objects (e.g., keys, pennies, toys, etc.)
- Utility knife

Approximate cost: Varies according to materials selected

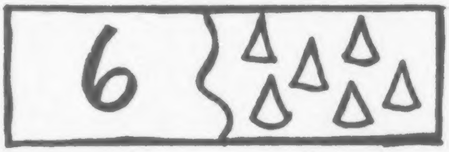
Instructions for Construction

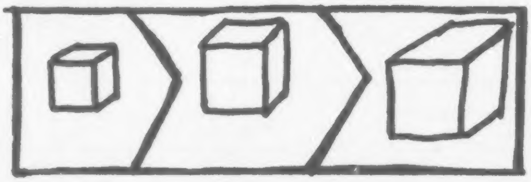
1. Cut pieces of poster board approximately 5" x 11".
2. Using a utility knife divide the card in a variety of ways.





3. Arrange objects and scraps according to the concept you wish to focus upon (e.g., shape, numberal, size, pattern) and glue.





Instructions for Use

Since these puzzles are self-correcting, children can use them independently.

Geoboard

Concepts and Skills Developed

Small muscle development
Figure-ground discrimination
Eye-hand coordination
Creation of own patterns
Awareness of attributes such as size, shape and color

Materials Needed

1 piece of wood, approximately 7" x 7" x 3/4"
30 finishing nails, 1-¼" long
Hammer
Duct tape (2" wide) for the edges of wood
Oak tag (for pattern cards)
Hole punch
Rubber bands (different sizes and colors)
Container for rubber bands

Approximate cost, excluding wood: less than $1.00.

Instructions for Construction

1. Tape all edges of wood.

2. Hammer nails 1" apart (6 rows of 6 nails in each).

3. Use 12" ruler, on end, to measure height of nails to keep them even.

4. a. Cut oak tag squares 7" x 7".
   b. Punch holes (using same measurements as for nail placement).
   c. Draw patterns on cards for children to reproduce with rubber bands.
   d. Have blank cards available for the child to make her own designs.

Instructions for Use

Place a container of rubber bands near the geoboard with pattern cards. The child proceeds by placing rubber bands around the nails in any way she chooses.

Variations

1. Use rubber bands of the same color.

2. Make specific shapes with rubber bands.

3. See how many shapes the child can create on the board.

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Graphs

Concepts and Skills Developed

One to one correspondence
Comparison
Size discrimination
Classification

Materials Needed

Newsprint or Poster Board
Magic markers
Glue
Pictures (drawn or cut out)

Approximate cost: negligible

Instructions for Use

Subjects like:

1. Class birthday: Each child places her picture of a cake in the appropriate space. Ask: "Which month has the most birthdays?"

2. Favorite colors: Each child places a colored inch-square cube on the graph to indicate her color preference.

Hooks and Washers

Concepts and Skills Developed

One to one correspondence
Size discrimination
Small muscle development (particularly in picking up and manipulating small washers)
Eye-hand coordination
Classification

Materials Needed

1 piece of plywood approximately 15" x 20" x 3/4"
12-18 hooks of various sizes (small--5/8", medium--5/16" large--7/16")
Duct tape for edges of wood
Awl or drill to start holes
Container for washers

Approximate cost: $2.30 for hardware

Instructions for Construction

1. Tape ends of the board to decrease splintering.

2. Start holes for screws, using awl or drill, making a random pattern.

3. Screw in hooks, keeping hooks of different sizes randomly distributed.

Instruction for Use

Place the container of washers near the hookboard. Let the child match washers with hooks according to size. This activity is not self-correcting.

Variations

1. Make a board, using one size hook and washer.

2. When making the board, use graduated sizes, placing smallest hook on left and largest on right.

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Printing Set

Concepts and Skills Developed

Manipulation of objects
Figure-ground discrimination
Creation of own patterns
Combination of colors; creation of new colors
Reproduction of design
Awareness of color and shape

Materials Needed

Inch cubes, wood scraps, wooden spools
Hardware
Keys
Cork
Pieces of rubber (cut into a variety of shapes)
Elmer's glue
Stamp pads or tempera paint on sponges
Boxes for storage of each set of implements
Magic markers for color-coding
Variety of paper and cardboard for printing

Approximate cost: Varies according to materials selected.

Instructions for Construction

1. Glue one object (rubber piece, key) onto each piece of wood.

2. Make up a set of printing blocks for each color paint or stamp pad; color-code with magic markers.

Instructions for Use

The child selects a shape, presses it onto a stamp pad or paint-soaked sponge and presses the shape onto paper to reproduce or create a design.

Variations

1. Using a paper towel roll as a base, the child can make individual rolls of wrapping paper.

2. Decorate wide strips of oaktag that can be folded and used for writing (dictating) letters.

Scent Bottles

Concepts and Skills Developed

Identification of scents
Matching of scents
Matching of scents with actual objects or pictures
Description of scents
Comparison of scents

Materials Needed

20 film cans
Extract: vanilla, peppermint, banana, orange, lemon, etc.
Peanut butter
Cocoa
Cinnamon sticks
Cloves
Gauze
Index cards
Clear contac paper
Magazines
Shoe box for storage

Approximate cost: $7.00 for bottled extracts, spices, gauze, index cards and contac paper. (Any camera store will give away film cans and food can be brought in from home.)

Instructions for Construction

1. Soak two pieces of gauze with extract or wrap a small piece of food in two pieces of gauze and place into two film cans.
2. Cut out or draw a picture of each item, mount on index cards and cover with clear contac paper.

Instructions for Use

1. As the child uncovers the film cans one at a time and smells each object, she tries to match the duplicate scents.
2. The child matches the set of smells with the pictures or objects.

Variations

1. Use painted baby food jars.
2. Use one film can of each scent for a group guessing game.
3. Give the child a clue about which scent is in the can: "Which is something that you can drink after it is mixed with hot water?"
4. Match each can with the actual object.
5. Give the child two cans and have her tell if they are the same or different.

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Screw Board

Concepts and Skills Developed

- Size discrimination
- Making predictions
- Small muscle development used in writing
- Comparison
- Use of a screwdriver
- One to one correspondence
- Language skills extended by comparative use of the following words: same, different, small, medium, large

Materials Needed

- 1 piece of wood 1-½" x 3-½" x 2"
- Drill
- Epoxy glue
- 9-10 stove bolts of three different sizes with matching nuts
- 4" short-handled screwdriver
- Container for stove bolts and screwdriver

Approximate cost: Hardware: $2.25 (Cost varies depending on store and size of bolts used.)

Instructions for Construction

1. Drill 9-10 holes deep enough for stove bolts to fit into.
2. Space holes evenly across board.
3. Set in and glue appropriate nut.

Instructions for Use

The child screws each metal screw into the matching nut on the board with a screwdriver. This activity is self-correcting.

Variations

1. Use regular bolts instead of stove bolts.
2. Make a board, using only one size nut and bolt.
3. Children can pair up and do this activity. This not only promotes cooperative behavior but it can also provide for very interesting conservation that can be recorded on a tape recorder.
4. When children develop this skill, they might enjoy timing themselves by using a stopwatch.
5. Some children might want to count the number of turns it takes different sized screws to go into the board.
6. At a very advanced level, decrease the difference between the size of the bolts or use the same size nuts and vary the length of the bolt.

Seriation Cards

Concepts and Skills Developed

Observation of likenesses and differences
Color discrimination
Comparison
Making judgements
Awareness of attributes such as size, shape and color when making comparisons
Sorting and grouping according to the criteria of the child or teacher

Materials Needed

5" x 8" index cards
Pictures from magazines: e.g., automobiles, people, toys, clothing
Elmer's glue
Clear contac paper

Approximate cost: $1.50 for glue and index cards

Instructions for Construction

1. Cut pictures which show variation on the criteria selected (short to long hair, baby to grandparent, summer to winter clothes).
2. Glue pictures to cards.
3. Cover with clear contac paper.

Instructions for Use

The child sorts cards according to the criteria selected, for example, color, function, age, size.

Variations

1. Use real objects for the child to sort.
2. Match real objects to pictures.
3. Use pictures from catalogues.
4. Let the child seriate cards according to size, color, age, shape, etc.

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Seriation Cylinders

Concepts and Skills Developed

- Comparison of lengths
- Eye-hand coordination
- Ordering by height or length
- Making predictions
- Description of the relationship of objects according to a specific property.

Materials Needed

- Wooden dowels (½" diameter)
- Saw
- Sandpaper
- Latex paint and brush
- Container for cylinders
- Tag board

Approximate cost: $1.00

Instructions for Construction

1. Cut dowels into different length pieces and sand ends.

2. Paint pieces a bright color.

3. Draw a reference card for each length dowel and glue these onto the storage container.

Instructions for Use

The child manipulates the wooden pieces, experimenting until they make a graduated pattern. Start by putting out three cylinders and gradually add cylinders to increase complexity.

Variations

Make lengths from cardboard tubing.

Sound Shakers

Concepts and Skills Developed

Discrimination between sounds
Matching sounds
Auditory perception
Ordering of sounds from soft to loud

Materials Needed

20 film cans
Rice
Salt
Sand
Beans (variety)
Bells
Washers
Index cards
Shoebox for storage

Approximate cost: 49¢ for index cards. Camera shops will give away film cans and all other materials can be brought from home.

Instructions for Construction

1. Fill 2 cans with each ingredient or object.

2. Draw 2 circles on each index card, using the film cans as a guide.

Instructions for Use

The child sorts the containers according to the sound made when she shakes the can. She places each identical pair on a separate index card.

Variations

1. Seriate the sounds from softest to loudest or vice versa.

2. For language development, ask: "Can you tell me something about the sound?" "What do you think might be in the can?"

3. Put the same object in different containers and discuss the different sounds that it makes.

Texture Board

Concepts and Skills Developed

One to one correspondence
Size, color and shape discrimination by using senses of touch and sight
Matching
Comparison of textures
Language skills by comparative use of the following words: rough, smooth, soft, hard, etc.
Making judgements

Materials Needed

1 piece of poster board 20" x 30"
24 to 30 (3"x5") index cards
Elmer's glue
Odds and ends such as styrofoam, bottle caps, foam rubber, buttons, macaroni, elastic, carpet scraps, fabric scraps, etc.
Small pieces of cardboard to back 3" x 5" cards

Approximate cost: $1.64 for poster board and index cards

Instructions for Construction

1. Place objects or fabric on cards. Make two alike.
2. Glue objects onto cardboard.
3. Arrange and glue one set to poster board.
4. Use the other set for matching activities.

Instructions for Use

1. Place the large poster board on a floor or table.
2. Allow plenty of time for child to explore it,
3. Place one set of cards in a shoebox with a hole in it or in a paper bag. Have child match the set of cards by touch.
4. Repeat with another child or with a small group of children.

Variations

1. Use different kinds of macaroni and spaghetti (different sizes and shapes) when making the set.
2. Use different textured fabrics only (begin with three samples; ask, "Which one feels very rough?)
3. Use different sizes and kinds of wood (be sure to sand edges), plastic pieces or buttons.
4. Vary the task: Child feels hidden object and matches it to another hidden object she has felt, or to a picture of the object or to the visible object.

Displays for Science Exploration

These displays can be used as a starting point for discussions. Ask open-ended questions to encourage the children's curiosity.

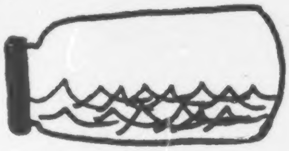
Ocean in a Bottle

Materials

Big, clear bottle with a secure twist top
Blue food coloring
Mineral oil

Procedure

1. Fill half the bottle with water.
2. Color the water blue with the food coloring.
3. Fill the bottle to the top with mineral oil and twist top on tightly.
4. Clean the bottle off with a paper towel.
5. Place the bottle on its side and you will see a "blue ocean." Rock the bottle to make waves.
6. Leave it out for children to explore and talk about.



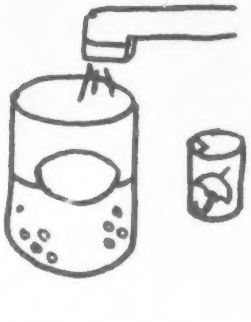
Floating Egg

Materials

Glass
Hot tap water
Egg, raw or cooked
Table salt
Measuring cup

Procedure

1. Fill the glass with hot tap water.
2. Lower an egg into the glass of water.
3. Pour in 1/4-cup of salt.
4. The water will get cloudy and the egg will float.



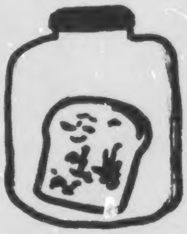
Spores and Molds

Materials

Large jar
Piece of bread

Procedure

1. Expose a piece of bread to the air overnight.
2. Put the bread into a closed jar.
3. Make sure the bread is kept moist.
4. Talk about changes as they take place.
5. Turn the jar upside down and tap gently in order to observe the mold from different angles.



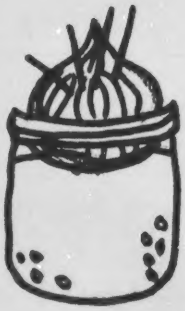
Water Jar and Toothpicks

Materials

Jar
Vegetable (e.g., onion, sweet potato, beet, garlic)
Toothpicks
Water

Procedure

1. Stick three or four toothpicks around the middle of the vegetable to suspend it in the mouth of the jar.
2. Fill the jar with water so that the bottom of the vegetable is covered.
3. Check the water level every few days. Keep the jar in a sunny place.



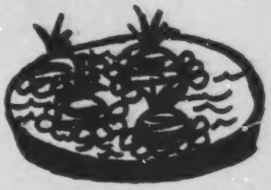
Water Dish Garden

Materials

Carrot tops that have some green stems
Shallow plate or pan
Small stones
Water

Procedure

1. Take a ½-inch slice from the top or stem end of several carrots.
2. Place the tops, cut side down, on a plate or pan. Surround each carrot top with small stones.
3. Fill the pan with water until the carrots are half covered.
4. Keep ½-inch of water in the pan at all times.



Variations: Use pineapple tops or turnip tops.

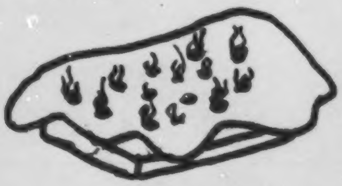
Sprouted Mustard or Cress Seeds

Materials

Mustard seeds
Cress seeds
Plate or plastic meat tray
Soil
Water
Paper towels
Waxed paper

Procedure

1. Cover the plate with soil or a wet paper towel.
2. Spread cress or mustard seeds thinly over surface.
3. Cover with waxed paper or an inverted plate until the seeds sprout.
4. Keep the soil or towel moist at all times.
5. When the seeds begin to grow, uncover the plate and place it in sunlight.
6. Continue to keep the paper moist.
7. When plants are about three inches tall, they are ready to eat.
8. Snip off what you need with scissors.
9. Wash and use in salads or sandwiches.



Variations: Alfalfa seeds, mung seeds.

Color Jars

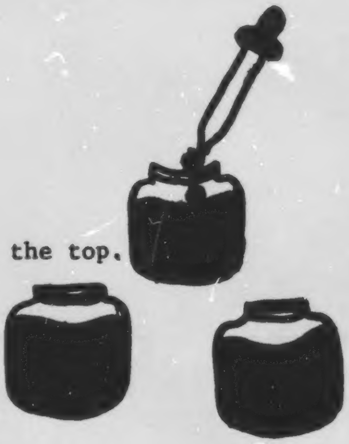
Materials

Small baby food jars with lids
Food coloring or tempera paints
Water
Small spoon or eye dropper
Paper towels

Procedure

1. Fill each jar with water almost to the top.
2. Start mixing different colors and see what changes take place.

This is a very good experiment that children can do alone. They like to talk about it as they do it and will invent their own color recipes.



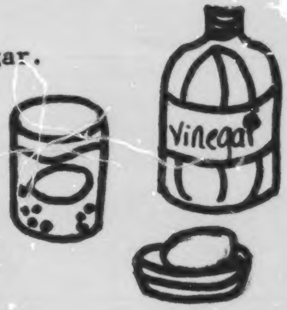
Rubber Eggs

Materials

Raw egg
Glass
Vinegar
Bowl

Procedure

1. Put the egg in a glass filled with vinegar.
2. Leave for one or two days until all of the shell has dissolved. If fragments of shell are left after a few days, they can be gently scraped off the egg.
3. Remove the egg from the solution and place in a bowl to avoid breakage.



Suggested Materials for Preschool Science Exploration

These and other household items you may think of encourage exploration and experimentation on the part of young children.

plants (live and dried)
seeds
nuts
rocks
seashells
insects
leaves
ant farm
terrarium
aquarium
animal bones (e.g., fish, chicken)
twigs
sand
fossils
snails
fruits and vegetables
feathers
gourds
water trough
small animals
coconut shells
bird's nest

buttons
magnets
flashlight
batteries, wires, bulbs
mirrors
old clock to take apart (or telephone, typewriter, etc.)
food coloring and water
mechanical toys
sponges
wood, metal, fabric scraps
magnifying glass
assortment of containers
noise makers
rubber bands
simple musical instruments
thermometer
weather vane
popsicle sticks
tools
thread, yarn, string
microscope
binoculars
funnel, sieve
compass
nuts and bolts
rubber tubing

RESOURCES

Math and Science Terms

Classification

Observing characteristics of things, sorting accordingly and labelling the characteristics.

Comparing

Describing the relationship between two objects according to a specific characteristic (e.g., texture, size).

Seriation

Arranging things in order, according to a specific property (e.g., weight, length, sweetness).

Spatial Relations

The knowledge of the relationship of objects to each other.

Temporal Relations

The understanding that time exists along a continuum--past, present and future.

Problem Solving

1. Identifying problems
2. Formulating hypotheses
3. Testing hypotheses
4. Recording results
5. Making generalizations
6. Evaluating processes

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Follow-Up Ideas for the Trainer

Give a workshop on Cooking with Preschoolers

Lead a workshop on Perceptual-Motor Development.

Organize a "Make It and Take It" workshop where staff make materials displayed at the Math and Science workshop.

Serve as a consultant to the center on the selection and display of math and science materials.

Lead a working session: look at some everyday situations and discuss the role of staff in encouraging the development of the scientific inquiry process.

Visit the center and demonstrate how the materials available to the children can be used in a variety of ways.

Help organize a parent "Make It and Take It" workshop so that some of the math and science materials will be available for the children to use in their homes.

Help organize a parent "Make It" workshop so parents can contribute materials to the center.

Lend materials and resource books to the center.

APPENDIX

Suggestions for Graph-Making

Favorite colors
Favorite foods
Kinds of pets owned
Color of eyes, hair, etc.
Growth of plants
Favorite stories
Kind of shoes worn that day
Favorite T.V. show

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when is Your birthday?

	Jan	Feb	Mar	Apr	May	Jne.	Jly	Aug	Sep	Oct	Nov	Dec

Cooking

Ellen Kotlus
Carol Carter Alexander
Lynn Collins Clarke
Dorothy Simpson
Brenda Taylor

PREPARING THE WORKSHOP ON COOKING

Workshop Objectives

1. To discuss the importance of cooking in the day care program and its relationship to other parts of the curriculum.
2. To present ideas for incorporating information on nutrition in cooking activities.
3. To provide an opportunity for caregivers to prepare several recipes.
4. To model a variety of approaches which caregivers can use when cooking with preschoolers.
5. To provide information on safety in cooking activities.
6. To suggest and display sources for recipes and information about cooking with preschoolers.

Materials for the Workshop

Household Items

3 Sets measuring spoons
4 Mixing spoons
3 Sets measuring cups
Spatula for flipping pancakes
1 Colander
5 Cutting boards
2 Pitchers
Bowls (large and small)
Serving dishes
Knives
Food Mill
Small jars with lids
Plastic forks, spoons and knives
Baking soda, in case of fire
Paper towels
Paper napkins
Waxpaper
Paper plates
Paper cups

Small Appliances

2 Blenders
Griddle
2 Electric fry pans

Props

Cork board
Tacks
Grocery bag sorting game*
Recipe chart
Scent bottles*
Sound Shakers*
Color-coded measuring chart
Colored tape (red, green, & blue)
  for color coding

Commercial Materials

USRDA Comparison Cards (National Dairy Council)**
Food Models and Booklets (National Dairy Council)**
Guide to Good Eating (National Dairy Council)**
We All Like Milk (Baby Animals Poster) (National Dairy Council)**

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*Instructions for making these materials are provided in the handout, "Cooking Games You Can Make."

**These materials can be ordered from: Dairy Council of Michigan
503 New Center Building
Detroit, MI 48202

Suggested Workshop Format

Method of Delivery

This workshop provided for full participation of the caregivers in preparing recipes and enjoying the results. A brief introduction focused upon the relationship of cooking to other areas of the preschool program. Suggestions for incorporating information on good nutrition into cooking activities were provided with the use of colorful nutrition cards. (See Appendix.)

Participants divided into small groups to prepare the recipes. Each area was set up with ingredients and utensils. A recipe chart and a list of safely rules were posted at each table. Only small appliances were required for the recipes so that the foods could be prepared at all of the day care centers.

Each workshop facilitator led a group. The leaders modeled the role of caregiver as they encouraged participants to explore ingredients and observe changes while the food was being prepared.

If this workshop is given to the staff of a single center, the group can choose one recipe to prepare and designate one person to play the role of caregiver. The recipes and suggested activities in the module can also be adapted for direct use with a group of children.

Time was provided at the end of the workshop for viewing books and handmade activities which relate to food and cooking.

Time Table (90 minute workshop)

Time	Topic	Method of Presentation
10 minutes	Introduction	Formal Presentation
10 minutes	Incorporating Good Nutrition into Cooking Activities	↓
45 minutes	Cooking in Small Groups A. Raw Vegetables and Dip B. Pancakes and Butter C. Applesauce D. Peanut Butter Balls	Small Group Activity ↓
20 minutes	Enjoying the Food Together	Large Group Activity
5 minutes	Viewing the Book and Activity Displays	Informal Browsing

THE WORKSHOP PRESENTATION

I. Introduction

The primary goal of this workshop is to have fun with cooking. Our hope is that you will enjoy the cooking activities enough to try them with the children in your centers.

Be ready for a mess! Making a mess is part of the learning process and can be a good experience for children. Children of busy, working parents often do not have opportunities for messy work and play at home. If cooking experiences are not provided in the day care center program, this valuable mode of learning may be missed entirely.

In this workshop we will discuss nutrition and the integration of cooking with the rest of the curriculum. Most of the workshop is spent preparing recipes and discussing how preparation of a specific food can be part of an educational program.

Finally, there is time for sampling everyone's dishes and for questions.

Cooking is not an isolated activity in the curriculum. It's an enjoyable vehicle for integrating all areas of the early childhood program. Children use their large muscles to stir, mash pick fruits and vegetables; their small muscles to cut, slice, grate, chop and peel hard-boiled eggs.

Cooking is a wonderful forum for introducing math and science concepts. It provides an opportunity for counting and measuring and for telling time. Children use one-to-one correspondence as they set the table and place a napkin at each setting. Following the sequenced procedure of a recipe develops seriation skills. Classification skills are built by encouraging children to use all their senses in exploring the ingredients. Children can compare sights, sounds, smells and textures as the foods are prepared.

These activities can be expanded by using materials such as the sound shakers and scent bottles described during the workshop. The grocery bag sorting game calls for classification into the four basic food groups. Changes are observed by watching butter melt, bread rise, gelatin set, fruit dry and sugar dissolve in hot or cold water.

Cooking is also a language activity in which you talk about the use of utensils, the taste of foods and the process of preparing a dish. You can look through books with children to find recipes or to read stories about cooking. A number of appropriate books are listed in the bibliography.

Many art activities are closely related to cooking. Color is part of any cooking project. Vegetables can be cut and used for printing or for dyeing fabrics. Making play dough, painting breads and stringing pasta incorporate aspects of both art and cooking curriculum areas.

Cooking helps children develop self-understanding, self-acceptance and self-esteem. Participating in adult work is always an exciting prospect for a child and seeing an activity through from beginning to end is a satisfying experience. Group cooking activities require sharing and tolerance for the work habits of others.

Finally, cooking is a marvelous method for introducing different cultures. Parents, grandparents, co-workers and people from the community can introduce dishes from around the world. By experiencing ethnic cooking, children can learn to appreciate differences in American eating habits.

Activities may include foods of the Native American, such as corn or fried breads. Spanish or Mexican cooking can use the tortilla. Barbeque sauce, cornbread, greens and black-eyed peas provide a sample of Black-American cooking. Oriental foods, such as tempura, tea eggs, tofu and bean sprouts, have an additional attraction in the use of chopsticks.

Very few day care centers have a full cooking facility for use with children. This is not a reason for excluding cooking from the curriculum, since small appliances can be used very effectively.

By preparing and eating foods in the center, children are exposed to many varieties of foods. They learn the importance of foods to their growth and experience the flavor of the world around them.

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II. Incorporating Good Nutrition into Cooking Activities

A. Introduction

The National Dairy Council Food Comparison Cards* are an effective way to demonstrate the nutritional value of foods. Using color-coded bar graphs, the cards reflect the percentage of U.S. recommended daily allowance of calories, protein, Vitamins A, C, B_1 and B_2, niacin, calcium, and iron in individual foods. The comparison card kit contains 57 cards representing common foods and can be used to demonstrate the nutritional value of food served in a day care setting or prepared in a cooking workshop.

For this workshop, cards were chosen that:

1. Represent foods that are "junk" foods or nutritious food, depending on the method of preparation and/or ingredients used.
2. Represent snacks commonly served in day care centers.
3. Represent various foods used in preparing recipes presented in the workshop.

The following six displays were used, each card or cards pinned on a small, portable cork board. Two comparison cards, banana and skim milk, are reproduced to demonstrate the appearance of the bar graphs, the information they provide and the way they fit together, rather like a key fits a lock, to provide important nutrients to children.

B. Display #1

(Use cards 42 and 7 pinned one above the other.)

The manner in which foods are prepared and the selection of ingredients can make the difference between serving "junk" food and serving familiar, well-liked foods that are also high in nutritional value.

For example, one quarter of a 14-inch cheese pizza pie made from scratch and a chocolate milk shake (12 ounces) made from milk, vanilla ice cream, and chocolate syrup would provide together:

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*A copy of two of these cards is given in Appendix B.

RDA	Protein	55%
RDA	Vitamin A	33%
RDA	Vitamin C	25%
RDA	Vitamin B_1	32%
RDA	Vitamin B_2	62%
RDA	Niacin	22%
RDA	Calcium	71%
RDA	Iron	21%

C. Display #2

(Use cards 30, 31 and 54 pinned on the cork board, one above the other).

Another example of how preparation of foods affects nutrition can be seen by comparing three ways of serving the potato.

		Calories	Protein	Vitamin C
10 potato chips	RDA	6%	1.5%	5%
20 french fries	RDA	12%	6%	30%
1 large baked potato	RDA	7%	6%	47%

As can be seen, a baked potato offers the most nutrition for the fewest calories. Particularly striking is the difference in Vitamin C content. Vitamin C is a vitamin that is not stored in the body and must be replaced every day.

D. Display #3

(Use cards 18 and 1 pinned one above the other on the cork board).

A frequently served snack in day care centers is a combination of fruit and cheese. They are complementary in taste, texture and nutritional quality. The example chosen for visual display uses a medium raw apple and a one ounce wedge of cheddar cheese.

Notice that the nurtrients balance one another. For example, an apple has little protein (.5% RDA) and cheese has 15% RDA; cheese has 1.5% RDA Vitamin C and an apple has 15% RDA. Together these foods provide the following percentages of recommended daily allowances:

RDA	Protein	15.5%
RDA	Vitamin A	12%
RDA	Vitamin C	11.5%
RDA	Vitamin B_1	3.5%
RDA	Vitamin B_2	7%
RDA	Niacin	1%
RDA	Calcium	25%
RDA	Iron	2.5%

E. Display #4

(Use card 15 alone)

Peanut butter is a child care center staple, and it is useful for caregivers to see the nutritional content of a food they provide in great quantity. The striking quality of two tablespoons of peanut butter is the protein content, 14% RDA. It also contains all of the B Vitamins.

The use of peanut butter as a complement to other foods can be further explored as time permits. For example, card 18 (apple) can be placed next to peanut butter to show how the missing Vitamins A and C in peanut butter are provided by serving it with apple slices.

Card 22 (celery sticks) can be used to demonstrate visually the complementary nutritional "fit" of a raw vegetable and peanut butter.

F. Display #5

(Use cards 6 and 19 pinned one above the other on the cork board)

These cards display the nutritional content of one of the beverages prepared and served during the experiential portion of the workshop. The main ingredients of "Banana Shake," skimmed milk and banana, are two foodstuffs which complement each other nutritionally. Particularly striking are the protein, Vitamin C, and Vitamin B_2 and calcium portions. Together one cup of skimmed milk and one medium banana provide:

RDA	Protein	26%
RDA	Vitamin C	24%
RDA	Vitamin B_2	33%
RDA	Calcuim	31%

G. Display #6

(Use cards 21, 22 and 23 pinned one above the other on the cork board).

These cards again display the nutritional content of one of the foods prepared and served during the workshop. "Raw Vegetables with Dip" demonstrates how different foodstuffs complement one another nutritionally. One-half cup cottage cheese provides 34% RDA potein, and vegetables add Vitamin A and C. Together, these foods provide a colorful, tasteful snack the preparation of which incorporates use of fine motor skills, sense of color, sense of texture, a variety of tastes and good nutrition.

III. Cooking in Small Groups*

A. Raw Vegetables and Dip

1. Materials

Provision for washing hands
Colander for washing vegetables
One knife for each child
Wood cutting boards
Large serving dish
Blender
Large spoon
Bowl
Paper plates

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*The recipe for a Banana Shake is in the handout, Recipes for Cooking with Preschoolers.

2. Recipes

   a. Vegetables
      bunch celery
      green peppers
      bunch broccoli
      head cauliflower
      string beans
      1) Wash the vegetables.
      2) Cut up each vegetable.
      3) Arrange the vegetables on a serving dish.
   b. Dip
      1 large container cottage cheese
      2 packages Green Goddess salad dressing
      1) Put Green Goddess dressing into the blender.
      2) Add cottage cheese a little at a time.
      3) Blend until creamy.

3. Before the Cooking Activity:

   a. Plan a field trip to a garden so the children can observe how vegetables grow. Take some vegetables back to the center to explore.
      1) Encourage the children to touch, smell, taste, feel and describe the vegetables.
      2) Have the children compare the vegetables' colors, shapes, textures.
   b. Buy the recipe ingredients at the supermarket with a small group of children.
      1) Allow the children to buy the ingredients.
      2) Some of the vegetables can be purchased at the local Farmer's Market.
   c. Discuss the cooking activity with the children.
      1) Post a recipe chart which illustrates the utensils, emphasizing the appropriate use of each.
      2) Allow the children to handle the utensils, emphasizing the appropriate use of each.
      3) Review the general safety rules to be followed during the cooking activity.
      4) The exploration of ingredients and discussion of procedure can take place the day before the cooking activity.

4. The Cooking Activity

   a. Have the recipe chart posted along with the safety rules.
   b. Explain the necessity of washing hands before starting to prepare food.

c. Make sure that each child has a specific task to perform. Provide a knife and cutting board for each child.

d. Converse with the children as they are preparing the recipe.
   1) Review what was said when the children first explored the vegetables.
   2) Describe how the vegetables are being cut.
      a) "Daryl is cutting the carrots into big chunks;"
      b) "Martha is cutting the green beans into tiny pieces;"
      c) "Jan is slicing the green pepper very thinly."
   3) Ask questions:
      a) "John, can you make those carrot chunks smaller?"
      b) "Paul, can you cut the rest of the cauliflower a different way?"
      c) "How is the inside of the celery different from the outside?"

e. Help the children observe and discuss what happens when ingredients are combined.
   1) "How does the cottage cheese look now that we have added the Green Goddess salad dressing?"
   2) "Does the cottage cheese feel or taste the same as before?" (Provide a plastic spoon for each child so she can sample the recipe.)

f. Encourage each child to take responsibility for cleaning up the area.

g. Enjoy eating with the children!

5. After the Cooking Activity

   a. Review the activity with the children the next day.
   b. Write a story with the children about their experience.

B. Pancakes

1. Materials

1 Large bowl
1 Small bowl
Fork
1 Wooden spoon
Pancake turner
Griddle or electric fry pan
Measuring cups
Measuring spoons
Saucer

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2. Recipe

1 cup whole wheat flour
1 cup unbleached white flour
2 eggs (beaten)
2 cups milk
2 teaspoons baking powder
½ cup oil or melted shortening or butter
1 teaspoon salt

1) Preheat the griddle
2) In a large bowl mix the measured flour, salt and baking powder.
3) Break the eggs into a small bowl and beat slightly with a fork.
4) Add the milk and oil, melted shortening or butter to the eggs.
5) Make a hole in the dry ingredients, pour in all the liquid at once; mix but don't over-mix. Pancake mixture should be lumpy.
6) Drop butter onto a hot griddle or fry pan by tablespoons. Cook until bubbles appear and the pancakes are lightly brown around edges.
7) Flip the pancakes and cook until golden brown on the second side.
8) Serve with: applesauce, warm honey, real maple syrup, cinnamon, fruit or grated cheese.
   Optional in batter: cinnamon, lemon juice, fruit.

3. Before the Cooking Activity

a. Plan a trip to the grocery store or supermaket so that the children can purchase the ingredients. Explore the ingredients back at the center.
   1) Encourage the children to describe the taste, texture and appearance of the flour.
   2) Compare whole wheat with unbleached white flour.
b. Discuss the cooking activity.
   1) Place the recipe chart where it can be seen easily and point out the utensils to be used and the procedure to be followed.
   2) Allow children to help color-code the measuring spoons and cups with tape.
   3) Review safety rules that are to be followed while cooking.

4. The Cooking Activity

   a. Post the recipe chart along with the safety rules.
   b. Explain the necessity of washing hands before starting to cook.
   c. Converse with the children as they are preparing the recipe.
      1) Review what was done when the children went shopping for the ingredients.
      2) Describe changes that are taking place:
         a) When milk is added to the dry ingredients;
         b) When batter is put on the hot griddle.
      3) Ask questions:
         a) "How has the color of the eggs changed (after they are beaten)?"
         b) "What do you think will happen when you add the eggs and milk to the flour mixture?"
         c) "How does the batter feel?"
         d) "What happened when the batter was poured onto the hot griddle?"
   d. Encourage each child to help clean up the cooking area.

5. After the Cooking Activity

   a. Review the activity with the use of the recipe chart.
   b. Write a story with the children about what they did.
   c. Ask for suggestions for other recipes that the children would like to try.

C. Butter

1. Materials

6 Small jars with lids
Wooden spoon
Small bowl

2. Recipe

1 quart whipping cream
¼ teaspoon salt
cold water
small jars

1) Have the cream at room temperature.
2) Fill each jar half full with cream.
3) Shake with the top on until small lumps of butter form (about 10 minutes).
4) Pour off the buttermilk.

5) Continue shaking until the butter has uniform consistency.
6) Pour off the buttermilk again.
7) Put the butter in a bowl. Work out the buttermilk with a spoon.
8) Wash the butter with cold water.
9) Add salt to taste.
10) Don't forget to taste the buttermilk. (It can be used in making the pancakes.)

3. Before the Cooking Activity

   a. Plan a field trip to a dairy farm so children can see where milk comes from.
   b. Plan a trip to the grocery store so that children can purchase whipping cream.
      1) Encourage the children to taste and compare the cream with the milk they drink and with powdered milk.
      2) Look at the texture of the powdered milk, then mix some and compare it with the whipping cream.
   c. Discuss the butter making activity.
      1) Post a picture recipe chart and explain the cooking procedure.
      2) Allow the children to explore all of the ingredients.

4. During the Cooking Activity

   a. Place the recipe chart where the children can see it easily.
   b. Explain why hands should be washed.
   c. Make sure that each child has a specific task.
   d. Ask the children to predict what will happen when they shake the jars.
   e. Ask questions:
      1) "Joe, can you see the butter forming in your jar?"
      2) "Jean, what color is your cream now?"
      3) "How is this different from the butter that you buy in a store?"
   f. Encourage the children to clean up the area.

5. After the Cooking Activity

   a. Review the process of making butter on the following day.
   b. Have the children write a story about their field trip.
   c. Ask the children to suggest foods to use with the butter.

D. Applesauce

1. Materials

Cutting boards
Sharp knives (sturdy serrated plastic knives can also be used)
Electric frying pan
Mixing spoon
Food mill

2. Recipe

2 pounds of apples (Winesaps or McIntosh are good)
honey or brown sugar
lemon juice
cinnamon

1) Wash the apples.
2) Cut the apples in four pieces and core them.
3) Put the pieces in an electric frying pan.
4) Cook over medium heat, stirring occasionally until the apples get soft. (If the apples start to stick, add a little water.)
5) Put the apples through a food mill or sieve.
6) Stir in the honey, lemon juice and cinnamon to taste.

3. Before the Cooking Activity

a. Take a trip to an orchard so the children can see where apples come from or go to the farmer's market to buy the apples.
b. Take a small group of children to the grocery store to buy ingredients.
    1) Talk about the sights, smells and sounds of the store.
    2) Let the children pay the cashier.
c. Plan the cooking experience with the children.
    1) Let the children explore the utensils.
        a) Explain the names of the utensils.
        b) Discuss how to use the utensils.
    2) Discuss the safety rules.
    3) Show the children a picture recipe chart which illustrates the ingredients and utensils and talk about what you are going to do.

4. The Cooking Activity

   a. Post the picture recipe chart and safety rules in the area where the cooking will take place.
   b. Have everyone wash her hands before starting.
   c. Talk about why it is important to wash both the apples and the hands.
   d. Explore the apples.
      1) Have enough apples so each child has her own.
      2) Ask, "What can you tell me about the apple?"
         a) If you use different kinds of apples (e.g., Golden Delicious or McIntosh), compare them.
         b) Allow each child to make an observation about the apples.
      3) Ask, "What do you think the apples look like inside?"
         a) Have each child make a prediction.
         b) Provide everyone with a knife.
   e. Cut the apples.
      1) Reinforce safety rules.
      2) Cut each apple, first in two pieces, then in four.
   f. Put two pieces of apple aside.
      1) Rub one piece with lemon and leave one as is.
      2) Make predictions and observe what actually occurs.
   g. Ask the children what kinds of dishes are cooked in their homes. Do any of them use apples?
   h. Let each child take a turn stirring and a turn adding an ingredient.
   i. Encourage the children to talk about their observations as the apples cook.
      1) "What is happening?"
      2) "Why do you think that happens?"
   j. Have each child help clean up after you are through.
   k. Share the applesauce with the rest of the group during snack time.

5. After the Cooking Activity

   a. Talk about making applesauce the next day.
      1) Have the children dictate a story about their experience.
      2) Let the children make suggestions for other cooking activities.
   b. On another day, serve apples a different way (e.g., raw) and talk about the similarities and differences from the applesauce that they made.

E. Peanut Butter Balls

1. Materials

Large mixing bowl
Spoon
Wax paper
Paper towels
Color-coded measuring cups
Color-coded measuring spoons
Provisions for washing hands

2. Recipe

1 cup smooth peanut butter
½ cup dry non-fat milk powder
1 cup coconut
½ teaspoon vanilla extract
¼ cup honey
1 cup raisins
1 cup all-bran cereal

1) Combine the peanut butter and dry milk in a large mixing bowl. Mix.
2) Stir in the coconut, extract, raisins and honey. Blend with hands. (Children love doing this.)
3) Roll the mixture into bite-size balls and coat with either coconut or all-bran or both. Store in the refrigerator.

3. Before the Cooking Activity

a. Plan a small group field trip to the grocery store and purchase recipe ingredients.
    1) Allow children to select ingredients.
    2) Allow children to assist with paying for the food.
b. Make the recipe as "homemade" as possible by:
    1) Buying a fresh coconut, opening it, grating it and drying it.
    2) Making peanut butter.
c. Purchase ingredients ahead and discuss the cooking experience prior to actually cooking.
    1) Post and discuss a recipe chart that illustrates the utensils and ingredients.
    2) Allow the children to handle utensils and talk about their proper use.
    3) Review safety rules to be followed during the cooking activity.

4. The Cooking Activity

   a. Post the recipe and measuring chart.
   b. Make sure each child has the opportunity to perform a specific task.
   c. This recipe uses hands for mixing so last minute handwashing is essential.
   d. This recipe works well using a "tasting party" approach while putting together the ingredients.
      1) Give each child a square of wax paper and pass a sample of each ingredient so the individual ingredients can be discussed and "tested" by taste, smell and texture.
      2) Allow for "likes" and "dislikes" and improvise to make several versions of peanut butter balls. For example, some children prefer no raisins, some children prefer no coconut.
   e. Allow children to mix the ingredients with their hands and roll the mixture into balls (wet paper towels clean up messy hands).
   f. While the children clean their hands and cooking project debris, put the peanut butter balls in the refrigerator for a few minutes. (Warm hands may make the peanut butter and honey ingredients soft and sticky).
   g. Enjoy eating the finished product with the children.

5. After the Cooking Activity

   a. Write a story on newsprint about the experience.
   b. Send home a mimeographed copy of the recipe so children can make it again.
   c. Talk about ways the recipe could be made again with a different touch. For example, "Next time we'll use a fresh coconut and make a coconut milk drink along with the peanut butter balls."

COOKING IN THE PRESCHOOL

Recipes for Cooking with Preschoolers

Vegetables with Dip

carrots
celery
green peppers
broccoli
cauliflower
string beans

1. Wash and cut up the vegetables.
2. Arrange the vegetables on a serving dish

Dip

1 large container of cottage cheese
2 packages of Green Goddess salad dressing

1. Pour the Green Goddess into a blender.
2. Add the cottage cheese, a little at a time. Beat until creamy.
3. Serve in a bowl.

Dip Recipes

1 large container of cottage cheese
1 cup chopped cucumber, peeled
1/4 cup dill
1/4 teaspoon salt

1. Blend the ingredients until creamy.
2. Serve in a bowl.

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1 pint yogurt
1 package French Onion soup mix

1. Pour the soup mix into yogurt.
2. Blend well with a fork.
3. Serve in a bowl.

Sunflower Seed Rolls

2 cups sunflower seeds
1 tablespoon honey
1 tablespoon smooth peanut butter
¼ teaspoon vanilla
grated coconut or wheat germ

1. Grind the sunflower seeds to a fine meal.
2. Add honey and peanut butter.
3. Knead the mixture into a dough and form into balls and other shapes.
4. Roll in coconut or wheat germ.

Peanut Butter

1 cup roasted peanuts
1 tablespoon vegetable oil
¼ teaspoon salt

1. Shell the peanuts and put into a blender.
2. Add the oil and salt.
3. Blend until smooth.

Salads

Combine in a large bowl:
grated raw carrots
chopped celery
raisins
drained crushed pinapple

Combine in a large bowl:
thinly sliced apples
raisins
raw green peas
mayonnaise to taste

Combine in a large bowl:
fresh orange sections or mandarin oranges
diced apples
banana slices
grated coconut
raisins

Person Salad

Use a pear half or peach half for the body.

Suggestions for body parts:
- Head: dried prune, half an apricot
- Eyes, nose, mouth: raisins
- Hair: shredded or sliced cheese
- Skirt or pants: cut up lettuce leaves

Celery Snacks

Fill celery sticks with peanut butter and raisins.

Prunes and Peanut Butter

(from Trinidad)

Cut prunes in half and fill with peanut butter or cream cheese.

Fruit Punches

4 cups apricot nectar
4 cups pineapple juice
dash ginger

OR

6 cups orange juice
2 cups lemon juice
1/2 cup molasses
dash powdered cloves

1. Stir the ingredients together.
2. Add ice.

Banana Shake

- 2 cups milk
- 1 ripe banana, broken into pieces
- 1 tablespoon honey or molasses

1. Put all the ingredients in a blender.
2. Blend at medium speed until smooth.

Sunny Shake

2 cups milk
2 ripe bananas, broken into pieces
1/4 cup orange juice
3 Tablespoons honey
pinch of salt
1/8 teaspoon vanilla

1. Put the ingredients in a blender.
2. Blend at medium speed until creamy.

Pineapple Shake

2 cups yogurt (any flavor)
1 cup milk
12 ounces crushed pineapple and juice
2 teaspoons honey
1/2 teaspoon cinnamon

1. Combine the ingredients in a blender.
2. Blend at medium speed until smooth.

Yogurt Fruit Shake

2 cups yogurt (any flavor)
1-1/2 cups pineapple juice
1/2 cup grape juice
2 ripe bananas, broken into pieces

1. Put the ingredients in a blender.
2. Blend at medium speed until smooth.

Tangy Treat

2 cups yogurt (any flavor, slightly frozen)
3/4 cup lemon juice
6 tablespoons honey

1. Combine the ingredients in a blender.
2. Blend at medium speed until smooth.

Children's Tea

12 oranges	3 quarts water
2 lemons	honey to taste (1/2 cup or more)
teaball filled with dry mint leaves	

1. Wash oranges and lemons.
2. Cut fruit in half and squeeze out juice into a large pan.
3. Grate the oranges and lemons, add rind to the juice.
4. Add mint.
5. Pour into water and stir.
6. Heat the tea until it begins to boil, simmer for 15 minutes.
7. Add honey to taste.

Hot Cocoa

1 quart milk	1/4 cup cocoa
4 tablespoons honey	dash salt

1. Stir ingredients together in a saucepan.
2. Cook over medium heat, stirring occasionally until hot.

Pancakes

1 cup whole wheat flour	1/2 cup oil, melted shortening or butter
1 cup unbleached white flour	1 teaspoon salt
2 eggs (beaten)	optional: cinnamon lemon juice fruit pieces
2 cups milk	
2 teaspoons baking powder	

1. Preheat griddle or electric fry pan.
2. Measure flour, salt, baking powder and put into large bowl.
3. Break eggs into small bowl and beat.
4. Add milk and oil (or shortening) to eggs.
5. Make a hole in dry ingredients, pour in all liquid at once and mix--don't overmix. Mixture should be lumpy.
6. Drop the batter by tablespoons onto hot griddle or fry pan. Cook until bubbles appear.
7. Turn over and cook until the pancakes are golden brown.
8. Serve with applesauce, maple syrup, fruit, warm honey, cinnamon or grated cheese.

Butter

1 quart whipping cream
1/4 teaspoon salt
small jars
wooden spoon

1. Have cream at room temperature.
2. Fill each jar half full with cream.
3. Shake with top on until small lumps of butter form (about 10 minutes).
4. Pour off buttermilk.
5. Continue shaking until butter has uniform consistency.
6. Pour off buttermilk again.
7. Put butter in bowl. Work out buttermilk with spoon.
8. Wash butter with cold water.
9. Add salt to taste.
10. Don't forget to taste buttermilk!*

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*The buttermilk can be used in cooking pancakes.

Egg-With-A-Hat

eggs, one for each child
slice of bread, one for each child
1/4 cup margarine
several round cookie cutters
cutting board
spatula
frying pan

1. Cut a large circle out of each piece of bread.
2. Melt 1/4 stick of margarine in a fry pan.
3. Put the bread and bread circles in pan.
4. Drop an egg into each hole.
5. Cook until egg is set.
6. Turn bread and circles over.
7. Cook for a minute and turn onto plates.
8. Cover the egg with cooked circle to make an egg with a hat.

Homemade Pasta

2 eggs, slightly beaten
1/3 teaspoon salt
2-1/2 cups flour (have extra flour for pastry board)

1. Beat eggs slightly.
2. Add salt and flour until dough sticks together and is stiff.
3. Sprinkle board or a clean table top with flour.
4. Give each child a ball of dough.
5. With rolling pin, roll out dough until it is very thin. Let children take turns rolling.
6. Cut 1/2 inch strips with knife or pastry wheel.
7. Before drying or cooking noodles, give each one a tug to make it longer. Noodles may be dried overnight on paper towel. (This isn't necessary for a one day project).

To cook the noddles:

1. Bring 3 quarts of water to a boil, add salt.
2. Drop in noodles and cook for 10-15 minutes or until tender.
3. Drain in colander. Serve with butter or cheese.

Chappatis

(fried Indian bread)

2 cups whole wheat flour
1-1/2 cups unbleached white flour
1/2 teaspoon salt

1. Mix ingredients and knead dough for 10-15 minutes. Break dough into small balls and give out to children to knead.
2. After kneading, place dough back into bowl. Cover with a damp cloth and let stand for 45-60 minutes.
3. Shape dough into balls the size of walnuts, roll and pat until they are flat.
4. Lightly oil fry pan. Using medium heat, fry a few pieces at a time, adding oil or butter as needed.
5. Serve warm with jelly, butter, applesauce, etc.

Makes 60 or more chappatis.

Gingerbread

- 1 cup whole wheat flour
- 1 cup unbleached white flour
- 1-1/2 teaspoons baking soda
- 1/2 teaspoon salt
- 1 teaspoon ginger
- 1 teaspoon other spices (experiment)
- 1 cup molasses
- 1 stick butter
- 1/2 cup yogurt or buttermilk
- 2 eggs

1. Sift flour, soda, salt, spices together into a bowl.
2. Heat molasses and butter until butter melts.
3. Add yogurt or buttermilk and eggs to butter mixture.
4. Add the flour mixture and stir until flour disappears.
5. Pour batter into an 8 inch greased square baking pan. Bake at 350 degrees for 30 minutes.

Optional:

Add ½ cup raisins.

Add ½ cup applesauce to the batter or use as a topping for the cake.

This is delicious when it is still warm!

Ice Cream Cone Cake

- 14 flat bottom cones (whole wheat cones can be purchased)
- 1 Jiffy cake mix (any flavor)

1. Set oven at 350 degrees.
2. Make Jiffy cake recipe.
3. Fill cones with cake batter until half full.
4. Stand the cones on a cookie sheet.
5. Bake for 35 minutes.
6. Cool and frost if desired.

Creamy Frosting

- 4 ounce package cream cheese
- 1 tablespoon milk
- 1 tablespoon honey
- 3 tablespoons milk powder
- 1 teaspoon extract (any flavor)

1. Blend honey or syrup with cream cheese.
2. Add milk and extract. Mix well.
3. Add dry ingredients. Mix until smooth and creamy.

Chunky Cookies

1/3 cup soft butter
1/2 cup honey
1 egg
1 teaspoon vanilla
1-1/4 cups whole wheat flour
  or 1/2 cup whole wheat,
  1/2 cup unbleached white
  flour
1/2 teaspoon baking soda
3/4 teaspoon salt
1 teaspoon cinnamon
1 cup raisins
1 cup granola

1. Blend butter and honey. Add egg and vanilla.
2. Sift together flour, baking soda, salt and cinnamon.
3. Mix the flour mixture with the butter mixture. Add raisins and granola.
4. Mix together. Drop by spoonsful onto an ungreased cookie sheet.
5. Bake at 350 degrees for 10-12 minutes.

Makes about 4 dozen cookies.

Peanut Butter Balls

1 cup smooth peanut butter
1/2 cup non-fat milk powder
1 cup coconut
1/2 teaspoon vanilla extract
1/4 cup honey
1 cup raisins
1 cup all-bran cereal

1. Combine peanut butter and dry milk into large mixing bowl. Mix.
2. Stir in coconut, extract, raisins and honey. Blend with hands. (Children love doing this; just think of the experience they will get).
3. Roll mixture into bite size balls and coat with either coconut or all-bran or both. Store in refrigerator.

Master Mix

Recipe

5 cups unbleached white flour
4 cups whole wheat flour
2-½ tablespoons salt
2 teaspoons cream of tartar
4 tablespoons sugar
1 cup nonfat dry milk
2 cups shortening
1/3 cup baking powder

1) Mix together thoroughly the flour, baking powder, tartar, sugar, salt and dry milk.
2) Cut in shortening with two knives or a pastry blender until the mixture is coarse.
3) Store at room temperature in a covered container.

Master mix can be used like Bisquick.

Muffins

3 cups of Master Mix
1 cup of orange or pineapple juice
2 eggs
¼ cup honey

1) Mix until the ingredients are moist; the batter will be lumpy.
2) Grease the muffin tins or use a liner and fill 2/3 of the way with batter.
3) Bake at 375 or 400 degrees for 20 minutes.

Pancakes

3 cups Master Mix
1-½ cups water
2 eggs

1) Beat the eggs well.
2) Add the master mix and water. Mix until well blended.
3) Lightly oil the griddle or fry pan and heat.
4) Pour in the batter to make pancakes. Flip the pancakes when browned lightly around the edges.
5) Serve warm.

Makes 18 to 24 pancakes.

Increasing the Nutritional Value of Foods Cooked

Substitutions

Sugar

Use 2/3 cup honey for each 1 cup sugar and reduce other recipe liquid by 3 tablespoons for every 2/3 cup honey.

Reduce sugar portion of recipe by one-half.

Chocolate or Cocoa

Use unsweetened cocoa or carob powder.

Flour

Combine unbleached white flour with whole wheat flour or whole wheat pastry flour. NOTE: Baked goods with 100% whole wheat flour will not rise as high and will be coarser.

Yogurt

Make your own yogurt and add fresh fruit.

Materials and ingredients
- Crock or earthenware bowl (1 - 1½ quart size)
- Measuring spoon
- Stirring spoon
- Saucepan
- 1 quart Milk
- 4 Tablespoons plain yogurt culture (use brand without additives)

Procedure
1. Heat the milk until warm but not boiling.
2. Pour into the crock or earthenware bowl.

3. Cool until a little warmer than lukewarm (test by putting a drop on inside part of wrist; the milk should feel warm but not hot).
4. Add the yogurt (which should be at room temperature).
5. Stir gently until well blended.
6. Cover the bowl and wrap completely with a warm blanket. Let stand for at least five hours or overnight at room temperature.
7. Place in the refrigerator.

Alternatives to milk for children who dislike milk

- yogurt*
- ice cream*
- cheese
- cottage cheese
- pudding*
- custard*

Alternative sources of calcium for children who are allergic to milk:

- spinach
- collards
- kale
- turnip greens
- egg yolks

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*These foods are best used when they are home or center prepared so the sugar and milk content can be controlled.

Apple Activities

The following ideas are suggested for learning about apples. All of the ideas can be adapted for any type of food.

Take a Trip to the Apple Orchard

Plan for the trip

Look at pictures of apples, apple trees and orchards.
Discuss appropriate clothes to wear.
Explain how everyone will get to the orchard and back.
Talk about how apples will be carried from the orchard back to the center.
Encourage parental participation.
Serve apple slices for a snack.

Take a Trip to the Supermarket

Go in groups and purchase different types of apples.
Allow the children to handle the money and buy the apples themselves.
When a recipe is planned, buy all of the necessary ingredients at the supermarket so the children can explore different sections of the store.
Buy apples at the local farmer's market.
Children will get a better understanding of:
- The use of money.
- The kinds of stores in the community.
- The kinds of jobs some people have.
- Shopping.

Back at the Center

Have enough apples so each child can have her own.
Explore the apples before any cooking is done.

The following attributes of apples may be pointed out by the children: color, shape, size, smell, taste and texture. If the children got different kinds of apples on their trip, they can compare them according to each attribute they choose to focus upon.

Beginning questions should be open-ended, e.g., "Can you tell me something about your apples?"
Extend the discussion when a child responds.
Example: child: "My apple is red."
adult: "Is everyone's apple red?"

Provide a knife for each child.
Ask: "What do you think the apple looks like on the inside?"
(Some children will need help in cutting the apple).
"How does your apple taste?"
"Does the peel taste different from the inside of the apple?"
"Can you cut the apple into different shapes?"
"Do you eat all parts of the apple?"

If the apples remain exposed to the air, some children may notice a change taking place, i.e., the apple turns brown. This can lead to a discussion about what happens to some food when it is exposed to the air and ways of preventing browning, e.g., using lemon juice, orange juice, salt or water. Allow the children to experiment.

Plan a Cooking Activity

Ask: "What can we make with the apples?"

Possible recipes include:

- apple sauce
- apple juice
- apple jelly
- apple butter
- baked apple
- apple pie
- apple cookies
- apple crisp
- apple salad
- apple cake

Cooking Activity

Plan cooking activities with the children.

The exploration of necessary ingredients and utensils can take place the day before you actually cook.

Safety rules should be discussed beforehand as well as during the actual cooking time.

Post a recipe chart which illustrates the necessary ingredients and utensils and explains the procedure involved.

While cooking, children will have the opportunity to:

Make predictions.
Observe changes (e.g., raw to cooked, solid to cooked).
Work through a process from beginning to end.
Become aware of the concept of measurement.
Expand vocabulary through conversation.
Build confidence in "adult" experiences.

Bob for Apples

Apple Recipes

Apple Butter

5 pounds of apples
1 cup wine vinegar
1½ cups honey
½ teaspoon salt
2 teaspoons cinnamon
1 teaspoon cloves
1 whole lemon

1. Wash and core the apples (don't peel).
2. Cut into small chunks and put into a large pot.
3. Add the vinegar, honey, salt, cinnamon and cloves. Stir.
4. Add juice from the lemon.
5. Cook, covered, for about 15 minutes at medium temperature, then uncover. Mash the apple mixture well with a potato masher.
6. Stir often. Butter is finished when it is thick and smooth.

Makes about two quarts.

Applesauce

2 pounds of apples (Winesaps or McIntosh are good)
honey or brown sugar
lemon juice
cinnamon

1. Wash the apples.
2. Cut the apples into four pieces and core.
3. Place apple pieces in an electric fry pan.
4. Cook over medium heat, stirring occasionally, until apples get soft. (If apples start to stick, add a little water).
5. Put the apples through a food mill or sieve.
6. Stir in honey, lemon juice and cinnamon to taste.

Apple Crisp

4 cups baking apples (about six medium apples)
3/4 cup packed brown sugar
½ cup flour
½ cup rolled oats
3/4 teaspoon cinnamon
3/4 teaspoon nutmeg
1/3 cup butter

1. Peel and slice the apples.
2. Put sliced apples in a greased 8-inch square baking pan.
3. Blend the flour, oats, cinnamon, nutmeg and butter until the mixture is crumbly.
4. Spread over the apples.
5. Bake 35 minutes at 350 degrees until topping is golden brown.

Cooking Games You Can Make

Grocery Bag Sorting Game

Concepts and Skills Developed

Identification of a variety of foods
Matching a picture to actual food
Sorting pictures of food according to type (e.g., meat, milk)

Materials Needed

4 large grocery bags
Pictures of foods from the four basic groups (milk, meat, fruits and vegetables, grain)
Clear contac paper
Shoe box for storage

Approximate cost: 49¢ for the contac paper. Use old magazines as a source of pictures.

Instructions for Construction

1. Cut out and paste pictures of foods on each grocery bag according to the four basic food groups.
2. Cut out several pictures of food, mount on index cards and cover with clear contac paper.

Instructions for Use

1. Choose a picture and identify the food (an adult or other children can help).
2. Put the picture into bags according to the appropriate food groups.

Scent Bottles

Concepts and Skills Developed

Identification of scents
Matching of scents
Matching of scents with actual objects or picture
Comparison of scents
Description of scents

Materials Needed

20 film cans
Extract: vanilla, peppermint, banana, orange, lemon, etc.
Peanut butter
Cocoa
Cinnamon sticks
Cloves
Gauze
Index cards
Clear contac paper
Magazines
Shoe box for storage

Approximate cost: $7.00 for bottled extracts, spices, gauze, index cards and contac paper. (Any camera store will give away film cans and food can be brought in from home.)

Instructions for Construction

1. Soak two pieces of gauze with extract or wrap a small piece of food in two pieces of gauze and place into two film cans.
2. Cut out or draw a picture of each item, mount on index cards and cover with clear contac paper.

Instructions for Use

1. As the child uncovers the film cans one at a time and smells each object, she tries to match the duplicate scents.
2. The child matches the set of smells with a picture or object.

Variations

1. Use painted baby food jars.
2. Use one film can of each scent for a group guessing game.
3. Give the child a clue about which scent is in the can: "Which is something that you can drink after it is mixed with hot water?"
4. Match each can with the actual object.
5. Give the child two cans and have her tell if they are the same or different.

Sound Shakers

Concepts and Skills Developed

Discrimination between sounds
Matching sounds
Auditory perception
Ordering of sounds from soft to loud

Materials Needed

20 film cans
Rice
Salt
Sand
Beans (variety)
Bells
Washers
Index cards
Shoebox for storage

Approximate cost: 49¢ for index cards. Camera shops will give away film cans and all other materials can be brought from home.

Instructions for Construction

1. Fill 2 cans with each ingredient or object.

2. Draw 2 circles on each index card, using film cans as a guide.

Instruction for Use

The child sorts the containers according to the sound made when she shakes the can. She places each identical pair on a seperate index card.

Variation

1. Seriate the sounds from softest to loudest or vice versa.

2. For language development ask: "Can you tell me something about the sound?" "What do you think might be in the can?"

3. Put the same object in different containers and discuss the different sounds that it makes.

Safety Considerations for Cooking

1. Discuss safety rules with the children before the activity begins and reinforce the rules during the activity.
2. Keep the group small.
3. Check the equipment to make sure it is in good working condition.
4. Have an adult present when electrical appliances or sharp utensils are in use.
5. Make sure that all ingredients and utensils are accessible.
6. Use large bowls to help prevent spills.
7. Help children become aware of sharp utensils and their correct use.
8. Know where the fire extinguisher is and how it is to be used. (If there is a small fire and an extinguisher is not readily available, cover the fire with the lid of a pot or dump baking soda on the fire to eliminate the supply of oxygen. NEVER PUT WATER ON AN ELECTRICAL OR GREASE FIRE. That will spread flames.)
9. Encourage the participation of parents in cooking experiences to provide extra supervision as well as several other pleasurable benefits.
10. Be aware of any regulations about the presence of children in nursery school or public kitchens.

RESOURCES

Bibliography

Cook Books

Use these books in a critical way. Not all of the recipes are appropriate for preschool children. It is important to balance recipes which call for mixes with those which use all natural ingredients (not prepackaged).

It is essential that you test a recipe before bringing it to your setting. In some cases, minor adjustments in ingredients and/or their amounts improve the recipes.

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There are several nursery rhymes (e.g., "Pat-a-Cake") which children enjoy. They can be used as a chant while children are beating, mixing, etc.

Follow-Up Ideas for the Trainer

Present the workshop on Preschool Math and Science.

Arrange to have a nutritionist review meal and snack menus with the center staff.

Encourage centers to send copies of recipes used to parents.

Visit the center and model a variety of cooking activities.

Ask caregivers to try a few activities suggested at the workshop and discuss these at a consultation session.

Ask parents and other adults in the community from different cultures to lead a cooking activity with the children.

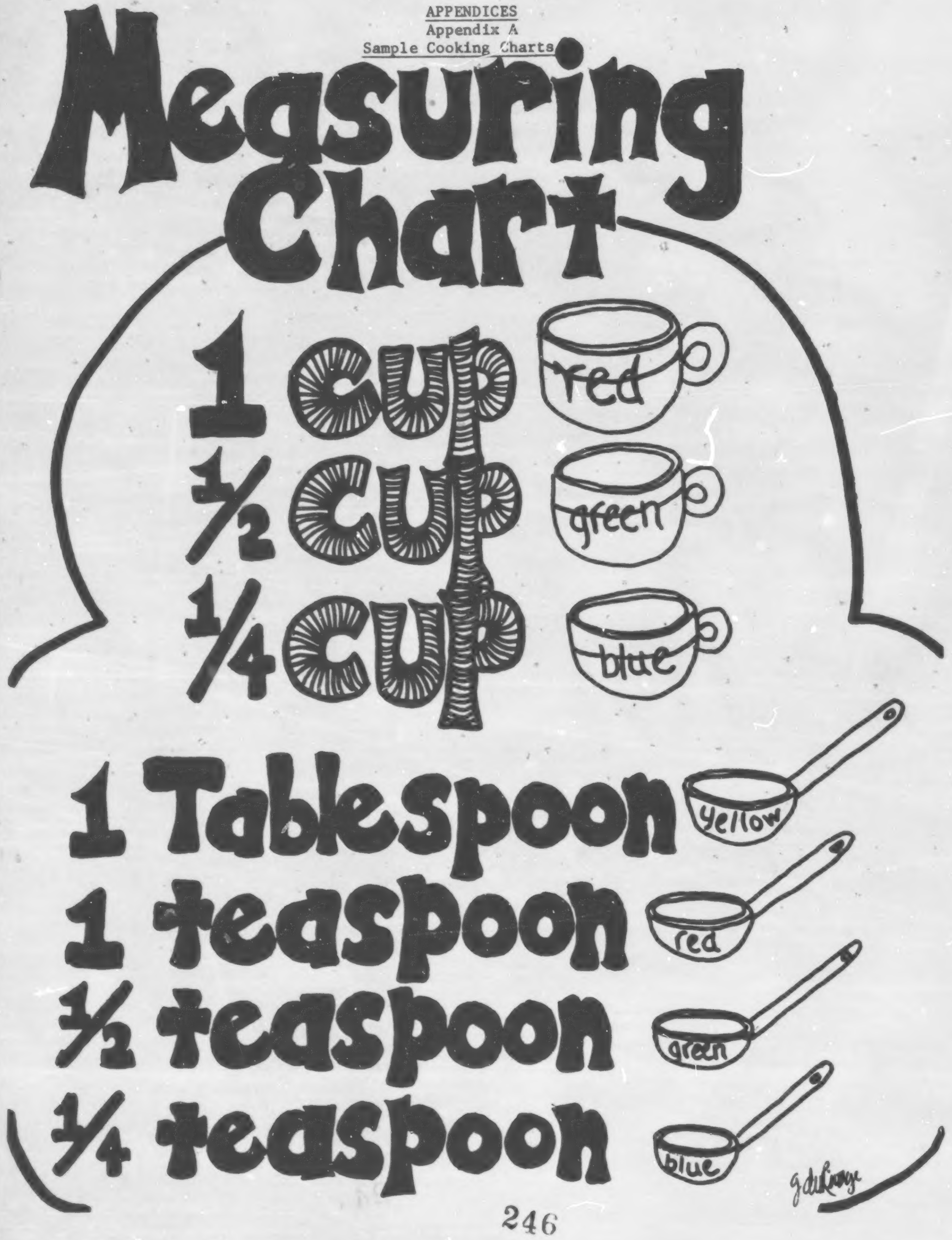
When visiting the center, reinforce the incorporation of cooking activities in the program.

Suggest that the center collect recipes for different holidays and share them with parents and other centers.

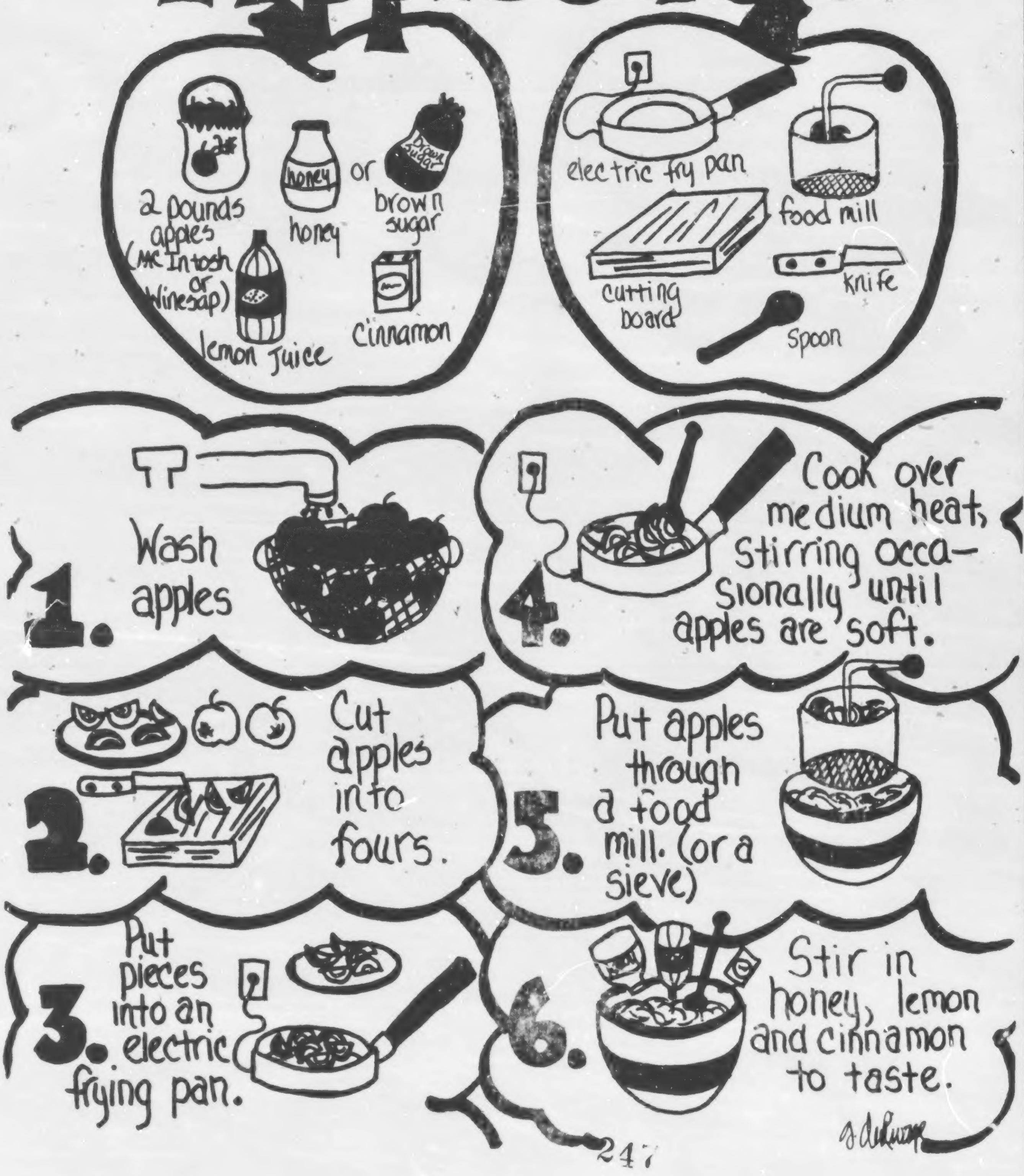
APPENDICES

Appendix A

Sample Cooking Charts


Measuring Chart
1 cup
red
1/2 cup
green
1/4 cup
blue
1 Tablespoon
yellow
1 teaspoon
red
1/2 teaspoon
green
1/4 teaspoon
blue

Applesauce



2 pounds apples (McIntosh or Winesap)

honey or brown sugar

lemon juice

cinnamon

electric fry pan

food mill

cutting board

knife

spoon

1. Wash apples

2. Cut apples into fours.

3. Put pieces into an electric frying pan.

4. Cook over medium heat, stirring occasionally until apples are soft.

5. Put apples through a food mill. (or a sieve)

6. Stir in honey, lemon and cinnamon to taste.

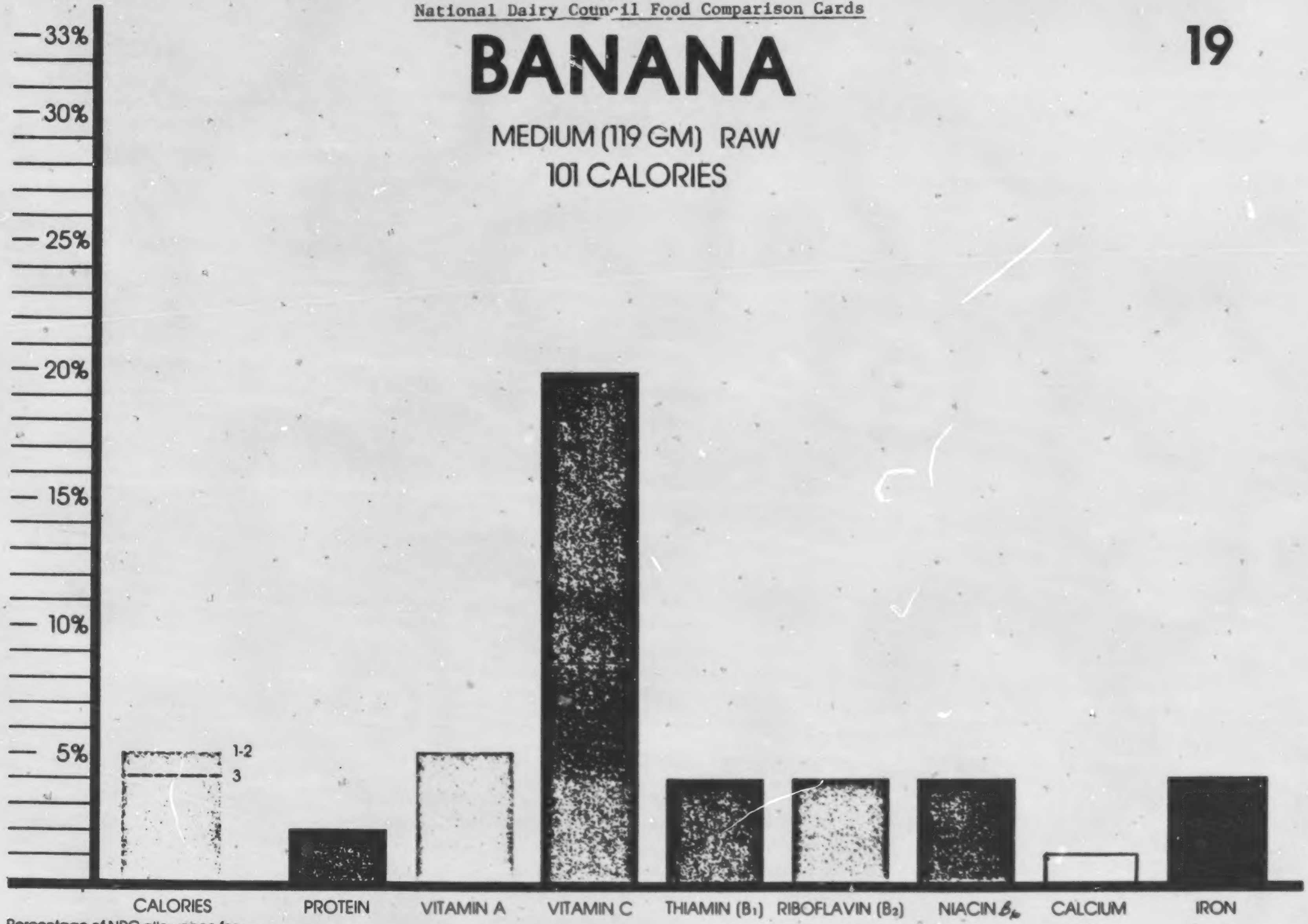
Appendix B

National Dairy Council Food Comparison Cards

BANANA

19

MEDIUM (119 GM) RAW
101 CALORIES



Percentage of NRC allowance for:
1 – woman, 23-50
2 – girl, 15-18
3 – girl, 11-14

CONTRIBUTION TO U.S. RECOMMENDED DAILY ALLOWANCES

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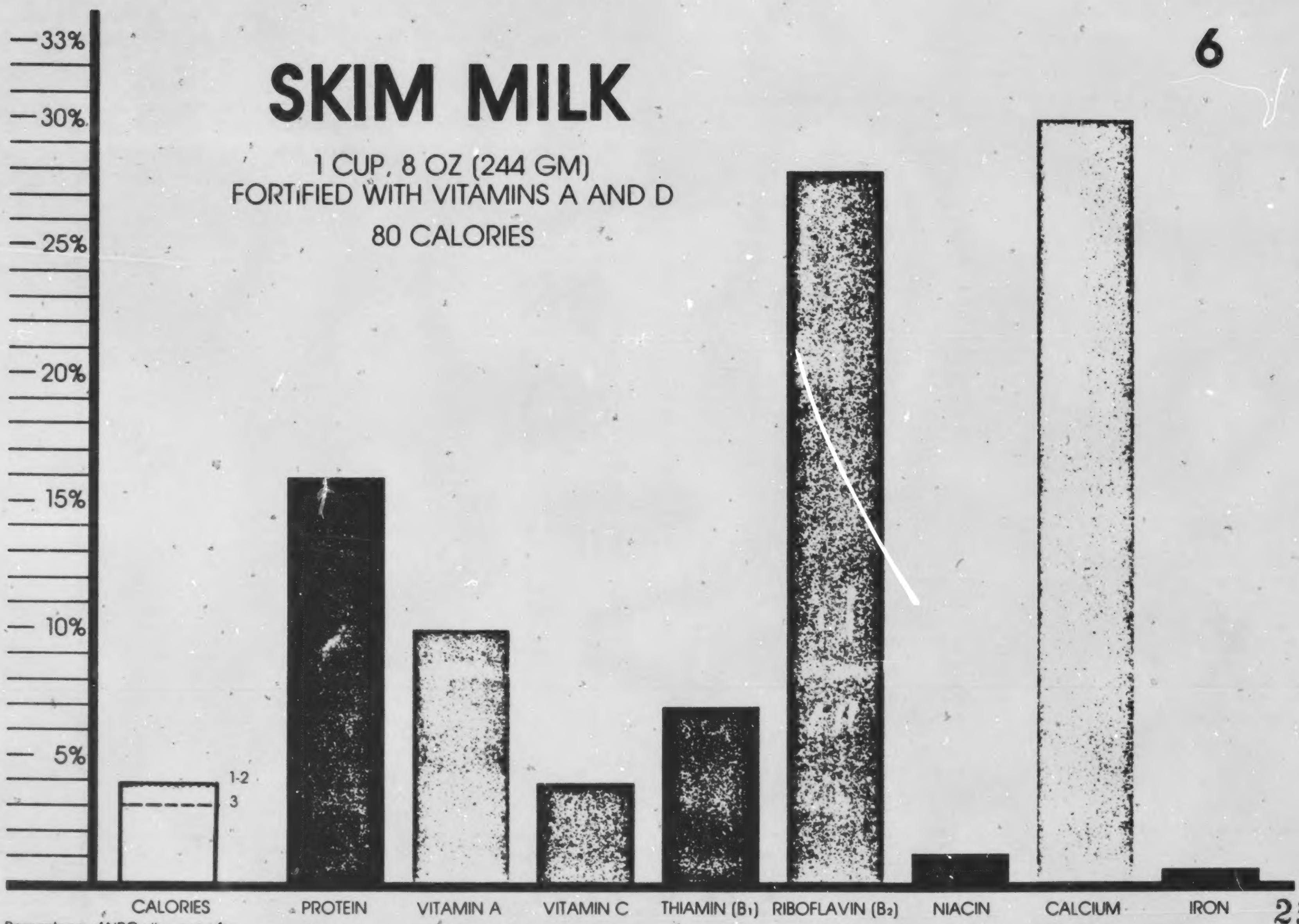
SKIM MILK

1 CUP, 8 OZ (244 GM)
FORTIFIED WITH VITAMINS A AND D
80 CALORIES



Percentage of NRC allowance for:
1—woman, 23-50
2—girl, 15-18
3—girl, 11-14

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"Rhythm and No Blues"

Virginia duRivage
Tobi Hanna Bartlett
Dorothy Simpson

PREPARING THE WORKSHOP ON RHYTHM AND MUSIC

Workshop Objectives

1. To involve the participants actively in movement and music activities.
2. To show that movement and music activities can be fun.
3. To discuss the importance of including movement and music activities in the day care program, both for groups and for individuals.
4. To model a variety of rhythm activities, including creative movement, songs, rhymes, and the use of rhythm instruments and the autoharp.
5. To suggest and display books and records for sources of preschool movement and music activities.
6. To provide examples of, and instructions for, inexpensive rhythm instruments that caregivers can make with children.
7. To provide a list of community resources related to preschool movement and music activities.

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Materials for the Workshop

Musical Instruments

- Autoharp
- Creative Playthings Rhythm Band
- Sampling of home-made rhythm instruments*

- Household Instruments:
  - Spoons
  - Pots and lids
  - Cheese grater
  - Washboard
  - Egg beater
  - Chopsticks

Other Materials

- Large queen-sized sheet
- Scarves
- Rolled-up socks
- Assorted books from the bibliography
- Assorted records from the discography

---

*Instructions for making these instruments are included in the hand-out "Rhythm Instruments: Easy to Make and Easy to Use."

Suggested Workshop Format

Method of Delivery

The workshop, "Rhythm and No Blues" was oriented towards involving the participants in rhythmic activities in speech, music and movement. We began with a general discussion of rhythmic development in children and related early memories of our own experiences with music. We introduced the autoharp and demonstrated its use in a day care setting. We explored the concepts of rhythm, beat and ostinato (improvisation) using songs, poems and rhythm instruments. And participants chose a rhythm instrument from among a large display of home-made, household and commercial ones and worked with them in a variety of ways.

Creative movement was explored through the use of props (e.g., scarves, parachute or sheets) and different games, and participants were encouraged to create their own forms of movement.

We set up two major displays for the workshop which included examples of books and records to use for rhythmic development as well as samples of rhythm instruments. Time was allotted at the beginning of the workshop to explore these resources.

Throughout the workshop participants were free to suggest ideas, ask questions or relate their own experiences with rhythmic activities.

Time Table (90 minute workshop)

Time	Topic	Method of Presentation
10 minutes	Exploration of Display Materials A. Books B. Rhythm Instruments	Informal Browsing
20 minutes	Introduction: What is Rhythm?	Formal Presentation
10 minutes	Integrating Rhythm in the Day Care Program	↓
20 minutes	Rhythm and Beat	Formal Presentation and Participation in Activities
20 minutes	Rhythm in Creative Movement Activities	↓
10 minutes	Evaluation: Large Group Sharing	Group Discussion

THE WORKSHOP PRESENTATION

Rhythm and No Blues

I. Introduction

The integration of music into the day care curriculum can be an intimidating task. As adults, we often feel we are not "talented" enough to use our voices and imaginations in promoting creative musical expression. As a result, we tend to neglect our own inherent forms of rhythm and their natural expression in speech, music and movement.

In this workshop, we will be participating in activities aimed at helping to broaden our own definitions of "rhythm" so that we might begin to feel more comfortable in the creative use of our musical imaginations. These activities serve as examples of the variety of ways in which we can explore music and rhythm with children.

The key to exploring rhythmic expression is to recognize our own natural forms of rhythm and to have fun in spontaneous expression of them with ourselves and with children.

If the opportunity for musical expression is provided in an atmosphere that is relaxing and creative, we can take the capital "M" out of music and help make it an integral part of every child's and our own love of life.

II. What Is Rhythm?

A. Rhythm is basic to speech, music and movement; it is the shared element among these three activities.

B. Rhythmic Development

1. Rhythm is a natural expression inherent in all of us from birth. From the moment she is born, sound discrimination is apparent as a child becomes acquainted with her parent's voice as well as with other sounds in her environment.

2. As children grow, they not only imitate sounds, but they begin to make up songs and rhymes.

3. Children sing and dance naturally while playing. They experiment with body rhythms through jumping, hopping, swaying and running.

4. Children continue to imitate and create sounds and movements while in the day care center.

5. Rhythm, then, is an important ingredient in the life of every young child and it becomes our responsibility as caregivers to encourage this natural expression of rhythm inherent in every child.

III. Integrating Rhythm in the Day Care Program

A. Individual Exploration

1. Provide a space in the center where children can have the opportunity to explore rhythmic forms.

    a. Have rhythm instruments in view and accessible for children to explore.
    b. Children can make their own rhythm instruments and share them with others. They can put their instruments in the "rhythm section" of the center. (Instructions for making instruments are given in the handout, "Rhythm Instruments: Easy to Make and Easy to Use" found in the next section of this module.)
    c. Include a cassette player in the center so children can tape their sounds as well as listen to different pieces of music.
        1) Include a variety of sounds in your center's music collection. Children in their preschool years are little shaped by western music forms and rhythms and as such are very open to sounds and rhythms from other cultures.
        2) Have children bring in their favorite music pieces from home to record on a center cassette. Put these in a center "music library" for children to play at will and to share with others.

2. Allow for single or small group exploration which will encourage children to collaborate on rhythm forms and to share instruments and ideas.

B. Group Exploration

1. Use musical instruments children make as a creative and fun way to accompany singing in the day care center. (See "Rhythm Instruments: Easy to Make and Easy to Use" in the next secion of this module.)

2. Home-made instruments can be used to depict certain sounds and/or movements within a song. Children can take different parts in a "musical band," trading parts and using a combination of singing and instrument playing.

3. Be creative with changing the words of a song, using words and songs children compose to create new songs and fresh ways of singing old ones. (For suggestions see, "Putting Your Own Words to Familiar Tunes" in the next section of this module.)

4. Use an autoharp to accompany children as they sing.

   a. It helps to reinforce the melody within a child's mind.
   b. It is an easy instrument to play. Two children can play an autoharp; one pressing the bar chords, the other strumming.
   c. An autoharp is durable. It can be left in a "rhythm area" without fear of damage.
   d. It is a mobile instrument that can be taken outside or on field trips.
   e. It can sound as beautiful as a piano, without the high cost!

IV. Rhythm and Beat

In this section we are concerned with two concepts: rhythm and beat.

A. Definitions

1. The beat of a song refers to the underlying steady pulse that continues without changing throughout a song.

   a. Children can listen for the beat as you mark it: talk and mark the beat through songs until the children learn what the beat is.
   b. Have children mark the beat by clapping their hands or by making other body sounds.

2. The rhythm of a song is different from the unchanging, steady pulse of the beat. The rhythm refers to the emphasis given to syllables of words in a song (Humpty Dumpty sat on a wall). The rhythm changes as the word syllables change. The rhythm also includes rests within a song--they are treated as silent syllables.

    a. Children can clap out the rhythm for each syllable as you talk through a song.
    b. Pauses, or rests, in the song can be marked by putting the hands out from each other.

B. Using Rhythm and Beat

Introducing the patterns of beat and rhythm within a song are the basic ways of encouraging musical understanding in young children and are further described in the handout, "Teaching an Old Song New Tricks."

1. Once children learn beats and rhythms, they can take different parts of a song, mark the beat or the rhythm and sing it at the same time.

2. Devise your own signals for marking the beat, rhythm and rests, like foot stamping, patting the floor with hands or using instruments.

3. Poetry is an excellent medium for practicing concepts of beat and rhythm with children.

    a. Clap out the rhythm or beat in nursery rhymes, street chants and children's own rhymes and poems.

4. Use questions or statements to illustrate rhymes and beat in everyday language (e.g., clap out rhythm to "How do you do today?")

C. Ostinato

Once an understanding of beat and rhythm is established, improvisation becomes an important part of understanding musical composition and arrangement. The use of free improvisation should be encouraged as often as possible with children in the day care center. A form of improvisation which can be taught to preschoolers is ostinato. An ostinato is a short rhythm pattern that is repeated over and over to accompany a song. For example, to accompany Humpty Dumpty one group of children might make the sound of the kings horses ("clip-clop") with instruments while the rest of the children sang the melody.

1. An easy way to choose an ostinato to fit a song is to take a section of the song and repeat it over and over, clapping, tapping or drumming the rhythm, using hands, feet and/or rhythm instruments.

2. Involve children as much as possible in creating new ostinatos and in other forms of musical improvisations.

D. The musical concepts of beat, rhythm, and ostinato are difficult ones to teach young children. Giving preschoolers lots of different experiences working only beats, working only rhythms, incorporating both within a group using a conductor and then introducing ostinatos and children's own free improvisations will challenge their creativity and greatly enhance both the caregiver's and the child's appreciation and enjoyment of the "sounds of music."

V. Rhythm in Creative Movement Activities

A. Developing Rhythmic Movement

1. It is natural for children to move, and easy to promote creative movement.

2. Movement activities, like the ones used in most gross motor activities, are ideal for developing rhythmic movement.

3. Encourage children to move as a form of personal expression and in dramatic play.

    a. Have children move in different ways (e.g., up, down, fast, slow, heavy, light).
    b. Have the children move alone or accompanied by rhythm instruments.
    c. Add props such as streamers, scarves and hoops to the movement activities.
    d. Have children act out various movements:
        1) "Move like an elephant walking or a horse galloping."
        2) "Pretend you are a tree growing from a seed."
        3) "Fly like a bird."

B. Movement and Sound Discrimination

1. Children can use creative movement in response to different types and pitches of sounds. Have them:

   a. Skip to a tambourine.
   b. Jump to the beat of a drum.
   c. Move up when they hear a high tone and move down when they hear a low tone.
   d. Move to different voice cues (e.g., "la, la, la" for walking slow; "giddy-up" for a gallop).

2. Caregivers can encourage children to use the outdoors and "outside sounds" for creative movement. Help children:

   a. Jump rope while chanting.
   b. Play running games (e.g., "Duck, duck, goose").
   c. Use whistles to start and stop running.
   d. Bounce balls while hopping.

C. Creative Movement and Music

1. Use records as an inspiration for children to create their own rhythms.

   a. Have children dance to popular music, folk music, folk music of other cultures--vary the beat and rhythm to accustom children to different forms of moving.
   b. Play games with music (e.g., Use broad arm movements to conduct a "symphony orchestra" recording).
   c. Play "Skip to My Lou."

2. Use scarves as props in creative movement and music. Suggest that children:

   a. Toss scarves in the air like a cloud.
   b. Wave a scarf high, wave it low as they move.
   c. Wave scarves like waves in an ocean.
   d. Toss scarves and exchange them with others.
   e. Fly like a butterfly using a scarf for wings.

D. The Parachute Game

1. Props: used parachute from an Army and Navy store or a brightly colored king or queen size sheet or two twin sheets sewn together.

2. Suggested activities:

   a. Walk around in a circle, moving the sheet up and down like a merry-go-round.
   b. Make calm and stormy waves like an ocean.
   c. Play "popcorn" on the parachute or sheet:
      1) Throw balls, rolled socks, yarn balls, etc. on the sheet and bounce them up and down trying to keep them on the sheet.
      2) Use "make believe" popcorn.

E. In all creative movement activities, encourage children to experience the joys of music and the joy of moving as a natural form of personal expression.

RHYTHM AND MUSIC IN THE PRESCHOOL

Teaching an Old Song New Tricks

Children's songs aren't only meant to be sung. They can be used in a variety of creative and fun activities. Using old songs in different ways revitalizes them and makes tham seem new again. It provides an opportunity for children to understand a variety of musical concepts--beat, rhythm, pitch, dynamics, harmony and melodic form.

The following is a list of suggested activities for "teaching an old song new tricks." Be creative--bring out the natural musician in children and in yourselves.

While you sing, mark the beat by:
- Clapping
- Stamping
- Walking
- Swaying
- Singing
- Patting your legs or other body part
- Making a motion that especially fits the song, e.g., rowing motions for "Row, Row, Row Your Boat."

Practice marking beats often with different songs so that children will come to understand the term "beat" by feeling it in their bodies.

Use the spoken word to mark rhythms. As you speak, clap the rhythm (one clap for each word syllable) and allow children to echo:
- Each child's name
- Children's street names
- Familiar words, e.g., classroom objects, animals, flowers, favorite foods, etc.
- Nursery rhymes
- Children's own rhymes
- Playground or street chants

Variation: Use rhythm instruments to mark rhythms. (Rhythm sticks, drums, or other instruments that children can tap quickly.)

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When children have had lots of experience clapping the rhythm to names and other words, try simple songs. Clap the rhythm of the words as you sing. Begin with songs without rests (pauses in the rhythm or words, while the beat goes on). Later, introduce the idea of "rests" by having the children mark each rest with their hands upturned and apart, or with some gesture that fits the song, e.g., in "Hot Cross Buns," blow on your hands for each rest:

Hot cross buns (blow)
Hot cross buns (blow)
One a penny, two a penny,
Hot cross buns. (blow)

In "Pease Porridge Hot", put in exclamations for rests:

Pease porridge hot, ("ouch")
Pease porridge cold. ("brr")
Pease porridge in the pot,
Nine days old ("yuck").

Variations:

After children have clapped to rhythms of speech and song, try clapping song rhythms without saying or singing the words--just think them.

Guessing games:

Hum a familiar song and have children identify it from the melody. Then hum it all together, or sing it to: "la, la, la."

Clap the rhythm to a familiar song, and see if children can identify it without hearing the words or the melody. (Use songs children have clapped themselves by just thinking the words).

Divide the group into parts, with one half marking the beat and the other half marking the rhythm. Switch parts.

Variation:

Use rhythm instruments--one kind of instrument for the beat and another kind for the rhythm.

Sing songs softly, loudly, then softly again. Increase pitch gradually from soft to loud and loud to soft. Move to the music, too, so that children can feel as well as hear the differences in pitch.

Variation:

Sing songs in a high voice, low voice and normal voice Move to the music, responding to the differences in pitch.

Have children sing like a king, a mouse, or any other animals or storybook characters they think of. Encourage children to sing each song in a variety of styles. Add movement, letting children create their own interpretations.

Variations:

Sing songs in a sad way, an angry way, a happy way. Have children make up facial expressions, voice qualities and body movements to accompany different emotions.

Have children choose an appropriate rhythm instrument for each emotion or each character, e.g., use bells to express happiness and loud drums to express anger. Combine playing with singing and movement.

After children are experienced in clapping the beat and the rhythm of a song, clap out a simple ostinato (a short rhythmical pattern repeated throughout a song). Choose one section of a song and clap it over and over throughout.

Examples:

"Humpty Dumpty"
Ostinato: Clap out the rhythm of "Humpty Dumpty," "Humpty, Dumpty."

"Row, Row, Row Your Boat"
Ostinato: Clap out the rhythm of "Row your boat," "Row your boat."

"I'm a Little Teapot"
Ostinato: Clap out the rhythm of "I'm a little teapot," "I'm a little teapot."

Have one group clap or tap the ostinato while the rest sing the song. (This will help children hear how the parts fit together The group doing the ostinato can say the words aloud or to themselves as they clap.

Variations:

Use other sounds, repeated rhythmically, for an ostinato:
- Vocal sounds ("Shh", "Ooh", "La", etc.)
- Body instruments (stamping, patting, clicking, snapping, tapping, pounding, etc.)
- Rhythm instruments

Conduct children in a "sound orchestra." Use signals for soft and loud, fast and slow. Allow children to take turns "conducting" once it has been modelled for them.

Variations:

Divide orchestra into two parts; one part singing, the other playing rhythm instruments. Parts can be devised using bodies and rhythm instruments to represent characters or objects in a song.

Examples:

"Humpty Dumpty"--Use different instruments for Humpty Dumpty and all the King's horses and men.

"Eensy Weensy Spider"--Use different instruments or body sounds for the spider, rain and sun.

"Hush Little Baby"--Use different instruments for each of the objects: mocking bird, billy goat, looking glass, etc.

Have children choose which body sound or rhythm to use for each object.

Have each child or group of children use creative movement to accompany their part.

Orchestrate a song with several different parts. Include beats, rhythms and ostinatos.

Examples:

"Twinkle, Twinkle, Little Star"
Have one group stamp and sing "Star, star" on the beat, beginning with the first note.

Have one group clap and sing "Twinkle, twinkle" as an ostinato beginning with the first note.

Have one group sing the song.

"Humpty Dumpty"
Have one group make the sound of an egg falling to the ground ("crack" or "splat") accompanied by a stamp, clap or rhythm instrument. Repeat this on the beat or on every other beat with a rest in between.

Have one group make the sound of the "King's horses" as an ostinato, e.g., "galloping" or "clippety clop" accompanied by tapping with their hands, feet or rhythm instruments.

Have the third group speak the rhyme.

Conduct the "orchestra" so that the group keeping the beat or doing a simple ostinato begins first. Add a more difficult ostinato and finally the rhyme or song. To end, stop each group in reverse order so that those who began are the last to end. (This gives children experience with a very common musical form--introduction, song, and the coda.)

Involve children in suggestions for sounds and direction. Everyone can take part in creating a beautiful, orchestrated piece from a simple rhyme or song.

Putting Your Own Words to Familiar Tunes

Inventing new songs can be a creative and enjoyable activity for both caregivers and children. Take a familiar tune--a children's song, a popular song or show tune, a favorite classical music piece--and make up your own words. Presto!--a brand new song! Songs can be composed for holidays; special units in the curriculum; field trips; children's special interests, experiences and accomplishments; and spontaneous happenings in your center.

The following is a compilation of songs created from familiar tunes to help get you started on the road to creativity. Happy singing!

Where is Thumbkin?

("Frere Jacques" tune)

Where is Thumbkin? Where is Thumbkin?
Here I am. Here I am.
How are you today sir? Very well, I thank you.
Run away. Run away.

(Act out with your thumbs. Repeat with pointer finger, tall finger, ring finger and pinky).

I hear thunder. I hear thunder. (Stamp your feet)
Hark, don't you? Hark don't you? (Cup your hand to each ear)
Pitter patter raindrops. Pitter patter raindrops.
(Clap hands lightly)
I'm wet through. So are you! (Hug yourself, then point at everyone else)

Clap hands softly. Clap hands softly.
One, two, three. One, two, three.
Now clap very loudly. Now clap very loudly.
Just like me. Just like me.

(Act out the words, emphasizing the difference between soft and loud. Repeat for any motions the children can think of which make noise, e.g., stamp feet, pat knees, tap the floor, etc. This works well with rhythm instruments also. Just change the words to fit the instruments you have, e.g., "Play your instruments softly." "Shake your bells softly," "Tap your drum softly," "Shake your tambourine softly," etc.)

A B C's

("Twinkle, Twinkle, Little Star" tune)

A B C D E F G,
H I J K L M N O P.
Q R S, T U V,
W, X, Y and Z.
Now I know my A B C's
Tell me what you think of me.

The Rain Goes Pitter Pat*

("The Farmer in the Dell" tune)

The rain goes pitter pat,
The rain goes pitter pat.
Hi, ho, when it's rainy out,
The rain goes pitter pat.
(Clap hands lightly on the words "pitter pat")

The lightning goes flash,
The lightning goes flash.
Hi, ho, when it's rainy out,
The lightning goes flash.
(Make fists and open them wide on the word "flash")

The thunder goes crash,
The thunder goes crash.
Hi, ho, when it's rainy out,
The thunder goes crash.
(Give a big clap on "crash")

*This was made up by a student teacher after listening to the weather forecast for the day.

The farmer plants the seeds,
The farmer plants the seeds.
Hi, ho, the derry-oh,
The farmer plants the seeds.

(Alternate the verses with: "The rain falls on the ground"; "The sun comes out and shines"; "The seeds begin to grow"; "The plants grow tall and strong"; "Now we have food to eat", etc. Act out each verse. Try changing the words for a specific fruit vegetable, or grain you want to sing about).

("The Farmer in the Dell" tune, cont'd.)

We're going to the park,
We're going to the park.
Hi, ho, the derry-oh,
We're going to the park.

Oh, what do you think we'll see?
Oh, what do you think we'll see?
Hi, ho, the derry-oh,
What do you think we'll see?

(Alternate verses with: "We're going to the zoo"; "We're going to the store"; "We're going to the car wash"; etc. Get children's suggestions of what they think they might see before going on a field trip. Then sing their answers and act them out).

Oh, maybe there'll be some swings,
Oh, maybe there'll be some swings.
Hi, ho, the derry-oh,
Maybe there'll be some swings.

(After a field trip, sing and act out the things you actually did see.)

Oh, Will You Be a Friend of Mine?

("Oh, Do You Know the Muffin Man?" tune)

Oh, will you be a friend of mine,
A friend of mine, a friend of mine.
Oh, will you be a friend of mine,
And play a game with me?

Oh, yes I'll be a friend of yours,
A friend of yours, a friend of yours.
Oh, yes I'll be a friend of yours,
And play a game with you.

* * *

Oh, do you know Melissa,
Melissa, Melissa.
Oh, do you know Melissa,
Who goes to school with us.

(This is especially good for helping children get to know each other's names when they're new to the center. Substitute other children's and caregivers' names to suit the appropriate place or occasion.)

("Oh, Do You Know the Muffin Man?" tune, cont'd.)

Oh, can you find a red and white shirt,
A red and white shirt, a red and white shirt.
Oh, can you find a red and white shirt,
That someone's wearing today?

(Substitute: "Some brown tie shoes"; "A dark green belt"; "Some blue striped pants"; etc. Children can make up their own verses for others to guess as well.)

D-I-N-O-S-A-U-R

("H-A-R-R-I-G-A-N" tune)

D-I-N-O-S,
A-U-R spells dinosaur.
A dinosaur was an enormous reptile,
But they've been dead now, oh, for such a long while.
D-I-N-O-S-A-U-R,
They were strange to see.
Though they were huge their brains were small,
So they were not too smart at all,
I am glad I'm me!

(This was written by a caregiver when she was doing a unit on dinasours and couldn't find any songs about them! It's a little tricky to sing since the rhythm is different each time you spell "dinosaur". It works well to make a sign with the word "dinosaur" on it and point to each letter as you sing it.)

We Give Thanks

("Amen" tune from The Lilies of the Field)

We give thanks.
We give thanks.
We give thanks for __________ and __________ .

(A caregiver made this up for Thanksgiving. Fill in the blanks with the children's suggestions of people they love and things they're are thankful for. Sing it over and over with different children's ideas, clapping hands to the beat.)

This Is the Way We Wash the Apples

("Here We Go Round the Mulberry Bush" tune)

This is the way they wash the apples,
Wash the apples, wash the apples.
This is the way they wash the apples,
When they make apple cider.

(Alternate verses with: "This is the way they chop up the apples"; "This is the way they wrap up the apples"; "This is the way they squeeze the apples"; "This is the way we drink the cider"; etc.
The song was invented after a trip to a cider mill. Children sang and acted out the song often which helped them remember what they had seen on the trip. It's a good tune for singing about the various process steps the children have experienced during a field trip or activity in the center.)

This is the way the water sprayed,
The water sprayed, the water sprayed.
This is the way the water sprayed,
When we went to the car wash.

(Alternate verses with: "This is the way the brushes cleaned," etc.)

This is the way we dig up the soil,
Dig up the soil, dig up the soil.
This is the way we dig up the soil,
When we take care of the garden.

(Alternate verses with: "This is the way we plant the seeds"; "This is the way we water the plants"; etc.)

Pop! Goes the Popcorn

("Pop! Goes the Weasel" tune)

We put some oil in the pan,
And then we put in the popcorn.
We put the pan on the heat,
Pop! Goes the popcorn!

(When children have actually experienced making popcorn in the center, have them act out this song with their hands and bodies.)

Here We Are Together

("Did You Ever See a Lassie" tune)

Oh, here we are together,
Together, together.
Oh, here we are together,
At day care today.

There's Jason and Nikki,
And Jenny and Sam.
Oh, here we are together,
At day care today.

(This song is a good way to take attendance during group time. It can be sung over and over to include everyone present).

* * *

All the leaves are falling,
Are falling, are falling.
All the leaves are falling,
Down to the ground.

There are red and yellow ones,
And orange ones and brown ones.
All the leaves are falling,
Down to the ground.

* * *

Did you ever smell a rosebud,
A rosebud, a rosebud?
Did you ever smell a rosebud?
Oh, how did it smell?

(When doing a unit on the five senses, this song can help children remember the words for the smells they've experienced. Other ideas for sensory remembering are: "Did you ever taste an onion?"; "Did you ever smell perfume?"; "Did you ever see a fire?"; "Did you ever hear an airplane?"; etc.)

I Have a Dog

("Six Little Ducks That I Once Knew")

I have a dog, his name is Rags.
He eats so much his belly sags.
His ears flip-flop and his tail wig-wags,
And when he walks he zigs and zags.

Flip-flop, wig-wag, zig-zag.
Flip-flop, wig-wag, zig-zag.
Flip-flop, wig-wag, zig-zag.
Flip-flop, wig-wag, zig-zag.

(Use both hands for ears when singing "flip-flop"; one hand for a tail when singing "wig-wag"; and the whole body for "zig-zag".

Here We Go Up, Up, Up

("Here We Go Loop-de-Loo" tune)

Here we go up, up, up.
Here we go down, down, down.
Here we go backwards and forwards,
Here we go round and round.

(This is a good song for acting out the lyrics.)

David can button his coat,
He didn't know how before.
But now David can button his coat,
Oh, David can button his coat.

Katy can do a somersault,
She didn't know how before.
But now Katy can do a somersault,
Oh, Katy can do a somersault.

(Almost any accomplishment can be fit into this song!)

Roll, Roll, Roll Your Hands
("Row, Row, Row Your Boat" tune)

Roll, roll, roll your hands,
Slowly as can be.
Roll, roll, roll your hands
Do it now with me.

Roll, roll, roll your hands,
Quickly as can be.
Roll, roll, roll your hands
Do it now with me.

(Think of different actions that can alternate between fast and slow.)

I'm a Little Airplane
("I'm a Little Teapot" tune)

I'm a little airplane. I can fly. (Use arms for wings)
Here is my throttle. Give it a try. (Pull on imaginary lever)
When I get all revved up, then I fly. (Use hands as propellers)
Down the runway to the sky. (Move one hand along the other outstretched arm, then up into the "sky")

Tap Your Tambourine
("Hoki Poki" tune)

You tap your tambourine in,
You tap your tambourine out,
You tap your tambourine in,
And you shake it all about.
You do the hoki poki
And you turn yourself around,
That's what it's all about.

(Invent other verses for other instruments, e.g., "You shake your maraca in"; "You blow your kazoo in"; etc.)

These Little Hands of Mine

("This Little Light of Mine" tune)

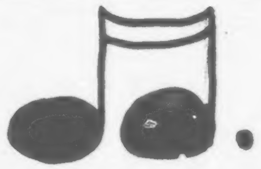
These little hands of mine,
I'm gonna let them shake.
These little hands of mine,
I'm gonna let them shake.
These little hands of mine,
I'm gonna let them shake.
Let them shake, let them shake, let them shake.

Take them to the sandbox,
I'm gonna let them shake.
Take them to the sandbox,
I'm gonna let them shake.
Take them to the sandbox,
I'm gonna let them shake.
Let them shake, let them shake, let them shake.

This little body of mine,
I'm gonna let it dance.
This little body of mine,
I'm gonna let it dance.
This little body of mine,
I'm gonna let it dance.
Let it dance, let it dance, let it dance.

Take it to the disco,
I'm gonna let it dance.
Take it to the disco,
I'm gonna let it dance.
Take it to the disco,
I'm gonna let it dance.
Let it dance, let it dance, let it dance.

(This is a good song to do with all sorts of body movements and rhythm instruments.)



Musical Instruments: Easy to Make and Easy to Use

The following are directions for making a variety of musical toys. They originate in Africa, the Americas and other cultures that have found their way into contemporary American folk cultures. The instructions are not fixed. Vary instrument sizes, shapes, styles and sounds as your imagination suits you. Invent new instruments with your preschoolers. Be creative and have fun!

Rhythm Sticks, Blocks and Rasps

Rhythm Sticks

Two 1" dowels, 12" long or two similar size tree branches

1. Sand rough edges of dowel if sawed.
2. Peel off bark from branches. (Soak branch first if bark is tough.)
3. Sand until smooth.

Variations:

Different lengths of wood make different sounds.
Paint or varnish sticks.
Use bamboo, broomsticks or other styles of hard wood.

Wooden Rasps

One 1" dowel, approximately 12" long or similar size tree branch
Wood file, pocket knife or coping saw

1. Sand wood as described in "Rhythm Sticks."
2. Mark grooves in wood, equally spaced along top of wood.
3. Using wood file, file grooves into wood. (If using a coping saw, saw grooves into wood and deepen them with a penknife.)
4. Sand rough edges.
5. Take another dowel or branch smaller in diameter than the rasp. Use it to play against notched wood in different rhythms.

Rattles and Bells

Tin Can or "Quaker Oats" Rattle

One large tin can with plastic top
One dowel, approximately 5" for handle (optional)
Rice, beans, popcorn, etc., for rattles
Decorating materials

1. Fill can or Quaker Oats box with rattles.
2. Replace lid. Tape Quaker Oats lid shut.
3. Decorate can or box with material scraps, paints, magic markers, beads, bells, etc.
4. Glue dowel onto end of rattle for handle. Shake for sound.

Variations:

Use other containers for a rattle: tennis ball cans, smaller cans, cups, bags, tea strainers, boxes, etc.

Different grains and beans or bottle caps make different rattling sounds.

Thomas Edison Rattle

Old lightbulb
Newspaper or old telephone book
Flour and paste or glue

1. Tear newsprint into small 1" strips.
2. Soak in papier mache paste and glue onto the lightbulb. Be sure to cover lightbulb thoroughly, at least six layers. Let dry overnight.
3. Break the covered bulb against a hard surface until glass jingles. The glass pieces are your rattlers.
4. Decorate the bulb rattle with paints, etc. (You can use clear plastic spray to preserve designs.)

Musical Instruments: Easy to Make and Easy to Use

The following are directions for making a variety of musical toys. They originate in Africa, the Americas and other cultures that have found their way into contemporary American folk cultures. The instructions are not fixed. Vary instrument sizes, shapes, styles and sounds as your imagination suits you. Invent new instruments with your preschoolers. Be creative and have fun!

Rhythm Sticks, Blocks and Rasps

Rhythm Sticks

Two 1" dowels, 12" long or two similar size tree branches

1. Sand rough edges of dowel if sawed.
2. Peel off bark from branches. (Soak branch first if bark is tough.)
3. Sand until smooth.

Variations:

Different lengths of wood make different sounds.
Paint or varnish sticks.
Use bamboo, broomsticks or other styles of hard wood.

Wooden Rasps

One 1" dowel, approximately 12" long or similar size tree branch
Wood file, pocket knife or coping saw

1. Sand wood as described in "Rhythm Sticks."
2. Mark grooves in wood, equally spaced along top of wood.
3. Using wood file, file grooves into wood. (If using a coping saw, saw grooves into wood and deepen them with a penknife.)
4. Sand rough edges.
5. Take another dowel or branch smaller in diameter than the rasp. Use it to play against notched wood in different rhythms.

Rattles and Bells

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Variations:

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Dancing Bells

Three to five bells (Christmas type)
2" x 6" leather strip
Shoestring or leather lacing

1. Cut slits into the leather with a knife or scissors--two slits for each bell, one slit for each end.
2. String lace through bells and through leather slits. Knot ends of lace.
3. Decorate with feathers and magic markers.

Variations:
Use an elastic band and sew bells onto it. These can be worn on the wrist or ankle and used while dancing.
Use a cotton cord and tie bells onto it. Then tie onto wrist or other body parts.

Bell Tambourines

Plastic top to large coffee can
Pipe cleaners
Bells (any number)

1. Punch holes (with scissors) into plastic top for each bell.
2. Cut pipe cleaner in half. Use half to attach to bell; half to attach to the lid; twine the two together.
3. Decorate and shake for sound.

Variations:
Use heavy paper plates, aluminum pie plates, or embroidery hoops as tambourines.

Jingle Bells

Bells
Broomstick, dowel, tree branch or similar wood piece
Yarn, string or pipe cleaner

1. Use pipe cleaners, etc. to attach bells directly to wood or attach string to nail on top of wood. Jingle for sound.
2. Decorate with odds and ends.

Bottle Cap Jingles

One block of wood, approximately 8" x 2" x 1"
Bottle caps, at least six
1-1/2" nails, at least three
5" dowel, large spool or film can for handle

1. Smooth wood with sandpaper if recently sawed.
2. Take pliers and bend out edges of bottle caps. Pound caps flat with a hammer.
3. Pound a hole through each cap with an ice pick or hammer. Make sure hole is wider than nail but not wider than its head.
4. Place nail through two holed bottle caps and hammer into the wood block. Hammer remaining nails and caps into block at equal intervals making sure caps aren't touching.
5. Hammer nails loosely so caps can jingle freely.
6. Decorate with feathers, yarn, paint, markers, etc.

Tuna Can Bell

One tuna fish can
One 1" washer
One 12" piece of string or yarn
One 5" nail

1. Attach washer to center of yarn or string.
2. Punch a hole in center of can with an ice pick or a hammer and nail.
3. Thread string with washer through the can. Make sure washer is low enough to hit the bottom of the can.
4. Hold bell by the top edge and ring.

Screw Eye Triangles

Large screw eye
Soft cord or yarn
Small nail

1. Suspend screw eye from the soft cord or yarn.
2. Tie the other end onto the nail.
3. Strike for tonal sound.

Nail Rasp

One block of wood, approximately 10" x 2" x 2"
Different size nails
One large nail for strumming

1. Draw a straight line down the center of the wood block.
2. Mark on wood where nails will be placed. (Use four different sets of nails, four in each group.)
3. Hammer nails into marked spots.
4. Decorate wood with paint or crayons or magic markers.
5. Strum the nail rasp with a large nail.

Variation:
Vary amount of nails used and/or length of wood to produce different sounds.

Washboard Rasp

Washboard
Thimbles or wooden spoon

1. Decorate washboard with painted spools, balls, etc.
2. Play washboard with thimbles or spoon.

Sand Blocks

Two pieces of wood the same size (at least 1" in diameter)
Enough sandpaper to cover one side of each block
Spools, drawer knobs or dowels for handles

1. Smooth wood with sandpaper if newly sawed.
2. Center piece of wood onto sandpaper, rough side out.
3. Cut corners of sandpaper. Bend paper over sides of wood and glue, tack or staple into place.
4. Nail or glue handle onto edge or back of wood.
5. Decorate.
6. Rub blocks together to play.

Variation:
Use different grades of sandpaper for different sounds.

Wind Chimes or Tone Bells

Wood dowel (approximately 8"), tree branch or wood square
Nails of different sizes
String or yarn

1. Tie nails, one or two, onto pieces of string or yarn.
2. Attach other end of string to a wood piece.
3. Strike with nail or thin piece of wood or let blow in wind for a soothing bell chime.

Variations:
Attach nails to an embroidery hoop.
Use clothespins and wood pieces for a wood chime.
Suspend an assortment of household items: keys, spoons, forks, nails to a wood piece.

Drums

Rubber Drum

2 lb. coffee can or similar size can
Rubber inner tube (free from a gas station)
Hole punch
Twine or shoestring, leather for lacing

1. Cut top and bottom out of coffee can.
2. Cut out two circles from inner tube, make them about 2" larger in circumference than coffee can.
3. Punch holes an equal distance apart on rubber circles.
4. String lace from top to bottom, pulling gently, all the way around the can to keep rubber heads tight.
5. Pull tightly on each strand, working around drum. Knot at the starting point.
6. Beat drum with hand or a drumstick.

Variations:
Remove bottom of coffee can; cover only the top opening. This will make a different drum sound.
Drums can be easily made from cans with plastic lids, Quaker Oats boxes or other similar-sized cylinders.

Drumsticks

Drumstick handles:	Use smoothly sanded tree branches, sticks, pencils, wooden dowels, old paint brushes, etc.
Drumstick tops:	Use plastic balls, plastic balls covered with felt or yarn, tinker toy wheels. tennis balls, pencil erasers, part of a whisk broom, chop sticks or professional drumsticks.

Attach tops to handles with twine, nails, or in some cases, you can cut holes in the tops and insert the handle.

String Sounds

String Boxes

Boxes with lids of varying sizes
Two pencils or thin wood pieces to act as bridges
Different size rubber bands

1. Cut a medium-sized hole in the middle part of the box tops.
2. Glue pencils or wood pieces, spaced evenly, one on each side of the sound hole. (Make slight notches in wood bridges to anchor rubber bands with wood file or pen knife.)
3. Decorate boxes.
4. String different-sized rubber bands around the box, fitting them over bridges.
5. Pluck, or strum for sound.

Rubber Band Zither

A piece of wood, approximately 1/2" x 8" x 12"
Ten screw eyes or nails
Five rubber bands of the same size

1. Draw straight line 1" from the 8" side of wood. Hammer five hooks or nails, evenly spaced, down the line.
2. From the middle of the 8" top, draw a line diagonally to the lower opposite corner. Hammer remaining five hooks or nails, equally spaced, along the diagonal.
3. Decorate board if desired.
4. Cut rubber bands so that they are one length. Tie or hook each into hook screws or nails, stretching rubber band across the board.
5. Strum for sound.
6. Play with various materials to hear how the sound changes.

Kazoos

Toilet Tube Kazoos

Toilet paper tube
Wax paper, rubber band

1. Cover one end of tube with wax paper, secure with rubber band.
2. Slit small holes into tube near wax paper top.
3. Decorate tube.
4. Hum for a great kazoo sound!

Comb Kazoo

Comb
Wax paper
Rubber band

1. Wrap wax paper around teeth of comb. Secure with rubber band.
2. Hum song into comb, holding teeth of comb vertically.

Household Instruments

Use pans for drums; spoons (wooden or metal), forks, chopsticks, etc. can be used for drumsticks.

Cheese and vegetable graters make good rasps. Stroke with a wooden spoon.

Two spoons, back to back, can be tapped together onto hand or knee.

A washboard can be played with a spoon or thimble.

Glue spools to back of pie tins for cymbals. Pan lids make natural cymbals.

Tin measuring cups can be hit together for sound.

Put rice, beans, bottle caps, etc. into a jar with a lid or pastry sugar cup for rattles. Fill spoon tea-strainers with rice, etc. for a small rattle.

Innumerable ready-made instruments await discovery in your home or day care center!

RESOURCES*

Community Resources

The following resources include stores, schools, organizations and public services that will assist you in promoting musical ideas in your day care center.

Don't forget: the most valuable resource is yourself and the people you work with. Share your talents and make music happen!

Music Stores

Ann Arbor Music Mart
336 S. State Street
Ann Arbor, MI
769-4980

Arbor Music Company
117 E. Liberty
Ann Arbor, MI
663-2692

Appollo Music Center
323 S. Main
Ann Arbor, MI
761-9430

Carty's Music, Inc.
701 N. Washington
Ypsilanti, MI
483-4428

Musicland
Briarwood Shopping Mall
Ann Arbor, MI
662-7110

Record Stores

Aura Sound & Entertainment
540 E. Liberty
Ann Arbor, MI
662-5623

Liberty Music Shop
417 E. Liberty
Ann Arbor, MI
662-0675

Paul Webb Record Shop
2430 E. Michigan
Ypsilanti, MI
482-5160
(They also sell musical instruments)

Schoolkids Records
523 E. Liberty
Ann Arbor, MI
994-8031
(Albums generally priced at $4.99)

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*These resources were compiled via telephone calls and word of mouth.

The Teacher's Store
16911 Middlebelt Road
Livonia, MI
525-0720
(This store has records, books and other resources for exploring music with children.)

Music Curriculum Resources

Ann Arbor Public Library
Outreach Department
Contact person: Laura Pershin
Phone: 994-2349

Laura is very familiar with preschool materials and is able to assist caregivers in locating books and ideas for music in the day care center. Call ahead to arrange a meeting with her.

Ann Arbor Public Library
Youth Department
Phone: 994-2345

The library has an excellent collection of books, records and cassettes relating to all aspects of young children's music.

Child Care Coordinating and Referral Service (CCCRS)
Contact person: Marianne Reif
Phone: 485-1100

CCCRS has applied for a three-month grant from the Ann Arbor Area Foundation for a "Children's Artist Team." If the grant comes through it will begin late September of 1979. CCCRS hopes to have resident artists in the areas of dance, drama, music and the manipulative arts. When called upon, the team will provide the service of assisting your center in implementing the art curriculum of your choice and need.

In the meantime, CCCRS maintains an extensive Resource Library which includes a toy lending library. Numerous musical instruments are available for centers to borrow. They come with instructions for use and suggestions for activities.

CCCRS does in-service work and will come into your center to help with curriculum ideas. They are very willing to help day care centers obtain performers or to help with special music projects.

Music Concerts

The following public schools and colleges have students in band, orchestra and other musical groups who are generally eager to come into a day care center to perform and explain their music with the children. Contact the Music Departments in September to set up desired times for a concert.

Community High School
401 N. Division
Ann Arbor, MI
Contact person: Barton Pollack
Phone: 994-2020

Pioneer High School
601 W. Stadium
Ann Arbor, MI
Contact person: Myles Mazur
Phone: 994-2120

University of Michigan
School of Music
Contact person: Jane Prince
Phone: 764-9547

Huron High School
2727 Fuller Road
Ann Arbor, MI
Contact person: John Witwell
Phone: 994-2096

Eastern Michigan University
Department of Music
Contact person: Dr. Hause
Phone: 487-1849

Washtenaw Community College
Music Department
Contact person: Dr. Morris Lawrence
Phone: 973-3300

Other Community Resources

Ann Arbor Public Library
Outreach Department
Contact person: Laura Pershin
Phone: 994-2349

The library receives offers from musicians who would like to perform music with preschoolers. Often they are forced to turn these down as their own activity schedule is fixed far in advance.

The library has agreed to keep the names and phone numbers of day care centers and will refer interested musicians to that list. If you are interested in this service, call the library Outreach Department and let them know.

Ann Arbor Department of Recreation
2250 S. Seventh
Ann Arbor, MI
Contact person: Nancy Berg
Phone: 994-2326

The Department of Recreation has a youth drama theatre, puppet theatre and a youth dance troupe as well as an adult Children's Theatre group, all of whom travel from school to school giving performances.

The material is generally oriented toward elementary grade levels but they do try to use material appropriate for ages three to six.

The performance schedule is tight, but if a group of day care centers is interested in scheduling a performance, it should be done early in September when you will be put on a list of interested audiences. If the performance can be scheduled in, the Recreation Department is happy to oblige.

Ark Coffeehouse
1421 Hill
Ann Arbor, MI
Phone: 761-1451

Many local folk musicians perform here and some may be interested in playing music with and for young children. Put a note up on the Ark bulletin board asking interested musicians to contact you.

Invite parents, brothers and sisters of children in your center as well as your own families to come into the center and share their musical talents with the children.

Mirage Dance Collective
314 1/2 S. State
Ann Arbor, MI
Contact person: Susan Schell-Clark
Phone: 995-4242

Mirage is a dance collective which emphasizes expressive movement in a humanistic setting. They hold many classes for preschoolers encouraging creative use of children's expressive movement. Mirage holds workshops for preschoolers and parents as well. Call if you are interested in a workshop for your center.

Ann Arbor Federation of Musicians
Local 625
202 E. Washington
Ann Arbor, MI
Contact person: Mr. Kenyon
Phone: 668-8041

An independent music fund is in existence which allows union musicians to play free for public schools and other worthwhile organizations in order to promote music listening. A small contribution is encouraged but not required.

When the concerts are set up, it is important that the audience be large. A group of day care centers who are interested can arrange for musicians to come into a center for a performance. The musicians would explain and show their instruments to the kids, let them participate in the show by dancing, singing, etc. To set up such an arrangement, contact the union at least 40 to 50 days in advance so musicans can be reserved.

Another way to take advantage of this opportunity is to take your preschoolers on a field trip to one of the nearby public schools where a concert is being held. The musicans do these types of young children's concerts often and they are open to the public. Your center can call the union and ask to be placed on their mailing list informing you of free concerts in area public schools.

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Follow-Up Ideas for Trainers

Give a workshop on Gross Motor Development.

Arrange for workshops led by community resource people addressing creative movement.

Encourage the center to have a "Make It and Take It" workshop for rhythm instruments.

Organize a working session with the center to develop a "rhythm area."

Loan books and records suggested in the bibliography and discography to the center.

Suggest the center make a recording of rhymes and songs that children make up.

Suggest the center organize field trips to dance and music concerts.

Help the center organize a dance or concert which involves parents and siblings of children at the center.

Give a workshop about the Orf method of musical instruction to further help centers involve children in musical discovery.

Socio-Dramatic Play

Esmeralda Watkins
Carol Carter Alexander
Mimi Harris
Ellen Kotlus

PREPARING THE WORKSHOP ON SOCIO-DRAMATIC PLAY

Workshop Objectives

1. To explore ways caregivers may facilitate socio-dramatic play without intruding or halting the process.
2. To describe the development of socio-dramatic play.
3. To discuss the emotional, cognitive, social and language benefits of socio-dramatic play.
4. To discuss the use of props.
5. To provide ideas for themes and the contents of prop boxes.

Materials for the Workshop

Post Office Prop Box*

Camper Prop Box*

Gardener Prop Box*

Bakery Prop Box*

Carpenter Prop Box*

Hospital Prop Box*

Books from the bibliography

Film: "Dramatic Play: An Integrative Process for Learning."
The film is available through Campus Film Productions,
20 East 46th Street, New York, N.Y.

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*Instructions for making these materials are provided in the handout, "Themes and Props for Socio-Dramatic Play."

Suggested Workshop Format

Method of Delivery

The following topics were addressed in a formal presentation: early play behavior, socio-dramatic play as an integrative approach to learning, the degree of teacher involvement, the teacher's role in functional terms, and deterrents to socio-dramatic play.

Part of the workshop as we presented it included a thirty-five minute film, "Dramatic Play: An Integrative Process for Learning." If the film is used, the presentations on "Early Play Behavior" and "Deterrents to Creative Play" should be deleted. Should you decide not to use the film, the handout "Discussion Starters" may be used between the sections on "Early Play Behaviors" and "Socio-Dramatic Play."

Time Table

With Movie (80 minutes)		Without Movie (85 minutes)
10 minutes	Introduction and Display of Materials	10 minutes
5 minutes	Early Play Behaviors A. Characteristics of Play B. Forerunners of Socio-Dramatic Play	5 minutes
15 minutes	Socio-Dramatic Play A. Major Characteristics B. Emotional Benefits of Socio-Dramatic Play	15 minutes
35 minutes	Movie or Discussion	20 minutes
	Play: An Integrative Approach to Learning A. Exploration of Materials and Roles is a Forerunner to Socio-Dramatic Play B. Socio-Dramatic Play Clarifies Roles, Institutions and Interactions C. Socio-Dramatic Play Strengthens Basic Learning Skills	10 minutes
15 minutes	Teacher Involvement in Socio-Dramatic Play A. The Degree of Teacher Involvement B. The Teacher's Function	15 minutes
	Deterrents to Creative Play A. How Material may Deter Creative Play B. Ways Adults Destroy Creative Play	10 minutes

THE WORKSHOP PRESENTATION: SOCIO-DRAMATIC PLAY

I. Introduction

The value of socio-dramatic play is frequently overlooked by caregivers. This workshop focuses on the contribution socio-dramatic play makes to all areas of development. The workshop also deals with the various roles a teacher may play in encouraging and stimulating socio-dramatic play.

II. Early Play Behaviors

A. Play is easily recognized, but defining it is difficult.

B. Catherine Garvey cites some characteristics commonly agreed upon:

1. It is pleasurable and enjoyable.

2. It has no intrinsic goals; it is inherently unproductive.

3. It is spontaneous and voluntary.

4. It involves some active engagement on the part of the player.

C. On the chart, "The Development of Socio-dramatic Play" are several characteristics that are forerunners to socio-dramatic play.

1. The child explores objects and discovers their uses before she can use them as props.

2. The child imitates characteristics of others when acting out roles.

3. The child engages in motor activities that develop skills needed for socio-dramatic play.

4. The child engages in pretend play.

   a. This is when she pretends to be someone else.
   b. She uses real and pretend objects, actions and speech to help herself take on the role.
   c. Language is a possible component of pretend play.

III. Socio-dramatic Play

A. Major characteristics

1. The child acts out a role with one or more other people--thus the "socio" aspect.

2. Socio-dramatic play requires language so children can sustain roles long enough for interaction to take place.

B. Emotional Benefits of Socio-Dramatic Play

1. A way to handle being little:

   a. The child can "become" bigger.
   b. She can create a fantasy in which she is able to do things no person could really do.

2. An opportunity to feel less helpless:

   a. Play gives the child a chance to "become" another person, to make decisions, to discipline, etc.
   b. The child understands adult actions better by exchanging roles with adults.

3. A time to express feelings about themselves and others:

   a. Play is an acceptable channel for unacceptable feelings.
   b. It is sometimes difficult for adults to watch children act out these feelings (e.g., a two-year-old throwing a baby doll against the wall).
   c. Playing out these feelings may lessen the child's negative feelings toward the real life situation (e.g., a new baby at home).

4. A chance to work through stressful experiences (e.g., hospitalization and parental separation).

5. A chance to practice and refine their social skills.

6. A chance to restructure past experiences.

7. A chance to enhance growth. Repetition of themes gives socio-dramatic play emotional value. Through repeating and modifying themes to fit her emotional needs the child is enhancing her growth.

IV. Play: An Integrative Approach to Learning
During socio-dramatic play, children's skills, knowledge and perceptions come together.

A. Exploration of materials and roles is a forerunner to socio-dramatic play.

1. The child needs a base of experience in order for roles and props to have any meaning.

2. The child must first manipulate props to understand their properties (e.g., discovering what a stethoscope does).

3. The next step is using props functionally (e.g., putting the stethoscope to someone's chest and listening through it).

4. Finally, the child is ready to take on the role of a doctor or nurse, based on her experience.

B. Through socio-dramatic play a child clarifies roles, institutions and interactions.

C. Socio-dramatic play strengthens skills that are basic to future learning.

1. The child who plays baker is strengthening fine motor skills as she kneads dough.

2. The firefighter improves her gross motor skills as she scales a burning building.

3. The store salesperson is better able to conceptualize "big" as she tries adult-sized shoes on another child's foot.

4. Through socio-dramatic play children are communicating--building their verbal ability.

V. Movie or Discussion: "Dramatic Play: An Integrative Process for Learning."
The film gives many examples of role playing and using materials such as blocks and housekeeping equipment. For discussion, see the Appendix, "Starting Discussion About Socio-Dramatic Play."

VI. Teacher Involvement in Socio-dramatic Play

A. The degree of teacher involvement in children's socic-dramatic play will vary depending upon the developmental level of the children and the specific play situations.

1. Onlooker: Observes children's play. Her attentive observation reinforces the children's play.

2. Participant: Takes an active role in the play. While participating, she models roles, interactions and use of props.

3. Stimulator of Imaginative Play: Suggests story lines, provides experiences to be acted out, organizes prop boxes, etc.

B. The Teacher's Function

1. Providing a base of experience for socio-dramatic play.

   a. The amount and kinds of experience children bring to the center vary a great deal.
   b. Teachers can help provide a common base of experience through stories, field trips and discussion of various roles.

2. Modeling appropriate language and behavior for particular roles and for positive social interactions.

3. Reinforcing both the socio-dramatic play itself and behavior you wish to encourage during the play.

   a. The amount of reinforcement depends on the degree to which you participate.
   b. When praising children, make the reason for praise clear. (e.g., "Good for you, Sheila, you helped Carrie move the chair; now you can both sit at the table.")

4. Organizing Props

   a. The need for props varies. Some children have a high fantasy level and require very little to engage in imaginative play.
   b. The kinds of props you provide can enrich the socio-dramatic play (e.g., after a trip to the fire station provide a fire hat, a piece of hose and blocks for building a truck).
   c. Provide opportunities for manipulation. The need for this will vary with each child's experience.
   d. Limiting props in number will require more sharing and interaction. Too few items may prove frustrating to younger children.

5. Suggesting slight modifications at the appropriate time; this can help expand the play.

   a. During a "bus ride," ask the driver if the bus is going to stop at the airport.
   b. During "family play," suggest that it may be time for the mail carrier to stop at the house.

6. Observing children closely to determine which children are limited in their ability to enter into socio-dramatic play. These children can be encouraged to pretend on a one-to-one basis.

7. Intervening to smooth the way for a child who wishes to participate in socio-dramatic play but lacks the skills.

8. Acknowledging that children do not always have to participate in socio-dramatic play to benefit from it.

9. Providing a space for socio-dramatic play away from distracting activities.

VII. Deterrents to Creative Play

"The imagination of a child is a sensitive thing. It can easily be made to shrink back by an unthinking adult." (From, "What Can Destroy the Value of Play" by Gladys Jenkins.)

A. Materials can be both discouraging and distracting if a child is not ready to use them effectively.

B. Adults who enter too actively or enthusiastically into spontaneous play often destroy it.

1. Laughing at things that appear to be cute, rearranging materials, criticizing role definition, etc., can interrupt the play.

2. Intervening when children are trying to resolve emotional issues can interfere with the process.

3. Asking too many probing questions during the play can break children's concentration.

4. Discouraging "special friendships" because they exclude others (e.g., not allowing a third child to enter play):

   a. Special friends make children feel sought after and depended upon.
   b. The confidence and sensitivity to others that develops enables the children to make wider friendships later on.

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RESOURCES

Themes and Props for Socio-Dramatic Play

Airplane Ride

Chairs in a row
Luggage
Snacks
Pilot's hat
Maps
Travel folders

Garbage Collector

Hats
Sack
Big box
Play truck
Wheelbarrow or wagon
Trash to pick up

Plumber

Wrenches
Small pieces of garden hose
Pipes of many sizes that fit together
Small tool box
Box of assorted water valves, washers, etc.

Photographer

Camera (old real one or pretend one)
Play photographs (pieces of paper)
Play money

House Painter

Empty plastic ice cream or margarine containers for paint
Water and food coloring
Paintbrushes
Painters' hats
Stirring sticks
Drop cloth
Overalls
Discarded shirts
Small stepladder (2-step)
Paint catalogues and sample paint chips
Something to paint:
  outside wall
  large appliance carton
  shoe or cereal boxes that can be used as building boxes

Restaurant

Tables and chairs
"Order pad" (pieces of paper stapled to cardboard)
Menus
Play dishes
Silverware
Trays
Centerpieces (made by kids)
Aprons
Plastic or paper place mats
Paper napkins
Simple snacks
Sponge
Play money

Camper

Knapsack
Canteen or thermos
Plastic dishes
Fishing pole
Long-handle strainer (fish net)
Frying pan
Toy shovel
Sleeping bag
Flashlight
Sticks for fire
Snack for food

Janitor

Mop
Pails
Sponges
Broom
Plastic squeeze bottles
Paper towels
Squeegee
Rags
Apron
Dustpan

Shoe Store

Boxes or paper bags
Shoes
Boots
Rubbers
Chairs
Sales pads (paper stapled to cardboard)
Pencils
Foot-long ruler
Play money

Car Wash

Toy cars or trucks
Bicycles
Toy fire engines
Rags
Pail
Squeegee
Plastic squeeze bottles
Boots or rubbers
Garden hose
Paper money

Post Office

Shoulder bags
Old envelopes
Junk mail
Old magazines, postcards, etc.
Packages
Stamps (made by children)
Old cancelled stamps or Easter Seals
Glue or paste
Small scale
Pens & pencils
Stamp pad & rubber stamp
Mail carrier's hat
Slotted cardboard box
Play money

Laundromat

Laundry basket
Empty soap containers
Old clothes
Dishpan
Clothes pins
Ironing board and iron
Hangers
Toy clock or kitchen timer
Cash register
Play money
Large boxes labeled "washer" and "dryer"

Grocery Store

- Boxes or long table for counters
- Boxes for shelves
- Empty cereal and cracker boxes
- Egg cartons
- Cans with smooth edges
- Butter containers
- Soaps
- Cleaning supplies
- Paper goods
- Fruits and vegetables
- Signs for the different foods
- Cash register
- Play money
- Telephone
- Order pads
- Pencils
- Wagon (for deliveries)
- Bags

Library

- Books
- Records
- Simple boxes for shelves
- Table
- Rubber stamp and pad
- Pencils
- Library cards (made from 3" x 5" cards)
- Chairs

Gardener

- Plastic garden tools or sticks for make-believe tools
- Pail
- Watering can
- Hose (can be vacuum cleaner variety)
- Empty seed packets
- Fake flowers (kids can make)

Bakery

Indoors:
- Play dough
- Cookie cutters
- Rolling pin
- Pastry containers (e.g., tart shells, cupcake pans, etc.)
- Decorations (e.g., raisins)
- Small birthday candles
- Aprons
- Spatula
- Stove

Outdoors:
- Sandbox
- Sieves
- Shovels
- Little trucks (for delivery)
- Decorations (e.g., sticks, pebbles, shells)
- Containers
- Cookie cutters

Carpenter

- Sandpaper
- Wood scraps
- Belt
- Toolbox
- Hammer
- Nails
- Pliers
- Screwdrivers
- Old hat
- Coveralls
- Work table

Fire Department

- Ladder
- Short piece of hose
- Firefighter's hat
- Fire engine (boxes turned upside down)
- Blocks
- Small bell or two spoons tied together

Gas Stations

- Bicycle tire pump
- Short piece of hose
- Wagons and trikes
- Oil can
- Rubber tools
- Cash register
- Play money
- Credit cards

Pet Store

- Stuffed animals
- Food and water dishes
- Cash register
- Play money

Shoe Shine Kit

- Cans of clear polish
- Sponges
- Buffers
- Soft cloths

Milk Carrier

- Wagon
- Empty dairy product containers
- White hat and shirt
- Small pad of paper
- Pencil

Fisher

- Poles with string
- Styrofoam worms
- Net
- Fish (kids can make)
- Boat (can be a box)
- Oars

Doctor, Nurse, Hospital

- Doctor's bag
- Band-aids
- Empty pill and medicine bottles
- Splints
- Plastic syringes
- Cloth for slings and bandages
- Adhesive
- Stethoscope
- White shirt (uniform)
- Eye chart (kids can make)
- Toy telephone
- Paper for prescriptions
- Table, chairs and magazines ("waiting room")
- Cots
- Blankets
- Bathroom scale

Farmer

- Seeds or empty seed packages
- Shovel
- Rake
- Hoe
- Watering can
- Wheeled vehicles (tractor)
- Toy animals

Construction Worker

- Hard hat
- Assorted toy tools
- Blocks
- Lunch box

The Development of Socio-Dramatic Play

TODDLER	THREE YEAR OLD	FOUR YEAR OLD	FIVE YEAR OLD
Characteristics	Characteristics	Characteristics	Characteristics
Explores objects and their uses Imitates movements of others Enjoys mirror play with adults Peek-a-boo Experiments with movement Objects begin to take on symbolic meaning	Real and "pretend" are not totally distinguished Roles frequently shift Actions are repeated over and over Begins to play out experiences that are frightening or confusing A whole person is represented by one aspect of her appearance or behavior Begins to play cooperatively with others	Can better distinguish between fantasy and reality (has more stable sense of self and can better distinguish who other people are) Roles are less fluid Frequently shifts from independent to dependent roles Increased awareness of masculine and feminine roles--these traits are exaggerated in play Can more fully play out experiences that are frightening or confusing Includes or excludes other children on basis of sex, color, etc. Attends to more details in role-play	Can distinguish between fantasy and reality Increased capacity to sublimate aggressive or frightening feelings Increased ability to use props and language in order to deal with abstract concepts
Typical Themes & Activities	Typical Themes & Activities	Typical Themes & Activities	Typical Themes & Activities
Mother-baby experiences Containment and release Seen in filling and emptying activities Different animals can be acted out	Separation/Individuation Seen in games of appearance and disappearance Commonly acts out role of mother in order to deal with her absence Familial Activities (loosely developed) Usually plays nurturant roles Collecting and gathering activities may incorporate this by going on a picnic or "moving"	"Home" themes expland to include experiences with beauty shop, firehouse, moving away, hospital, etc. with appropriate roles played out Attempt to manage aggressive impulses seen in: Portrayal of superheroes who attack and also rescue Monster play: a person is designated as "monster" from whom children must run Set up of "safe" place where "good" people can enter and "bad" people must stay out Silly behavior, use of nonsense words, swearing Hiding and Burying activities Sexual curiousity--playing "doctor" Use of specific movements (e.g., slither like a snake)	There is a wide variety of socio-dramatic play with many of the earlier developmental themes still being worked on Increased interest in romance (boy-girl chases, bride-groom play) Sustained enactment of roles (real people--police, nurse) (cultural heroes--astronaut, rock star)

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Follow-up Ideas for Trainers

Hold a "Make It and Take It" workshop where staff can make materials displayed at the workshop.

Plan a consultation session around the selection and display of props for socio-dramatic play.

Have a working session: brainstorm common problems that arise during socio-dramatic play and ways staff can overcome them.

Help staff encourage parents to contribute material that may be used for socio-dramatic play at the center.

With the center staff compile a list of field trips with props and discussion suggestions which facilitate socio-dramatic play.

Lend materials and resource books to the center.

APPENDIX

Starting a Discussion about Socio-Dramatic Play

Select one or more of the following questions or situations for discussion. If you choose to brainstorm the situation, have someone write the suggestions on newsprint or a blackboard.

1. How is socio-dramatic play integrated into different areas of the preschool curriculum?

2. What are some ways that socio-dramatic play can be facilitated or extended through the use of a variety of props?

3. How does the role of the adult affect socio-dramatic play?

4. How can the observation of a child engaged in socio-dramatic play increase our understanding of her developmental level?

5. After "The Teacher's Function," role-play or simulate one or more of the following situations:

    a. Ricky asks you to come into the housekeeping corner and be his baby at least once a day. You have five other children under your direct supervision.

    b. Vanessa, three and a half years old, recently made a trip to the hospital; her treatment required surgery. She is coming back to the center today.

    c. Clyde is watching the firefighters put out fires and save scores of lives. One of the children invites him to join them. Clyde looks at you questioningly.